IMPORTANT

Before you remove the Wire-Seal, check the contents of this envelope with the listing on the front of the envelope. If any part is missing, your Howard W. Sams distributor will replace the entire PHOTOFACT set IF the Wire-Seal has not been damaged.

This PHOTOFACT Folder Set is

WIRE-SEALED FOR YOUR PROTECTION

to guarantee completeness of contents

DO NOT ACCEPT IF SEAL HAS BEEN BROKEN

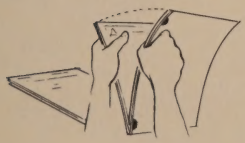
TO OPEN ***JUST DO THIS:***

1

Take hold of the Set with both hands. Place your thumbs directly under the top wire-seal; then, divide the contents equally by putting your thumbs midway through the thickness of the Set. Now, pull the two sections apart at the top, firmly.

2

Repeat this process, pulling close to the wire-seal at the bottom, so that the set is now divided into two equal parts.



3

Continue this "pulling-apart" process with the section in which the wire-seals remain, dividing it in half.

4

Finally, remove the wire-seals left in the last section; this can easily be done with your fingernail or any sharp instrument.

Your "Safety-Sealed" PHOTOFACT Set is now ready for profit-making use . . .

IMPORTANT

Before you remove the Wire-Seal, check the contents of this envelope with the listing on the front of the envelope. If any part is missing, your Howard W. Sams distributor will replace the entire PHOTOFACT set IF the Wire-Seal has not been damaged.

The PHOTOFACT® Servicer

SET 525 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ APRIL 1961

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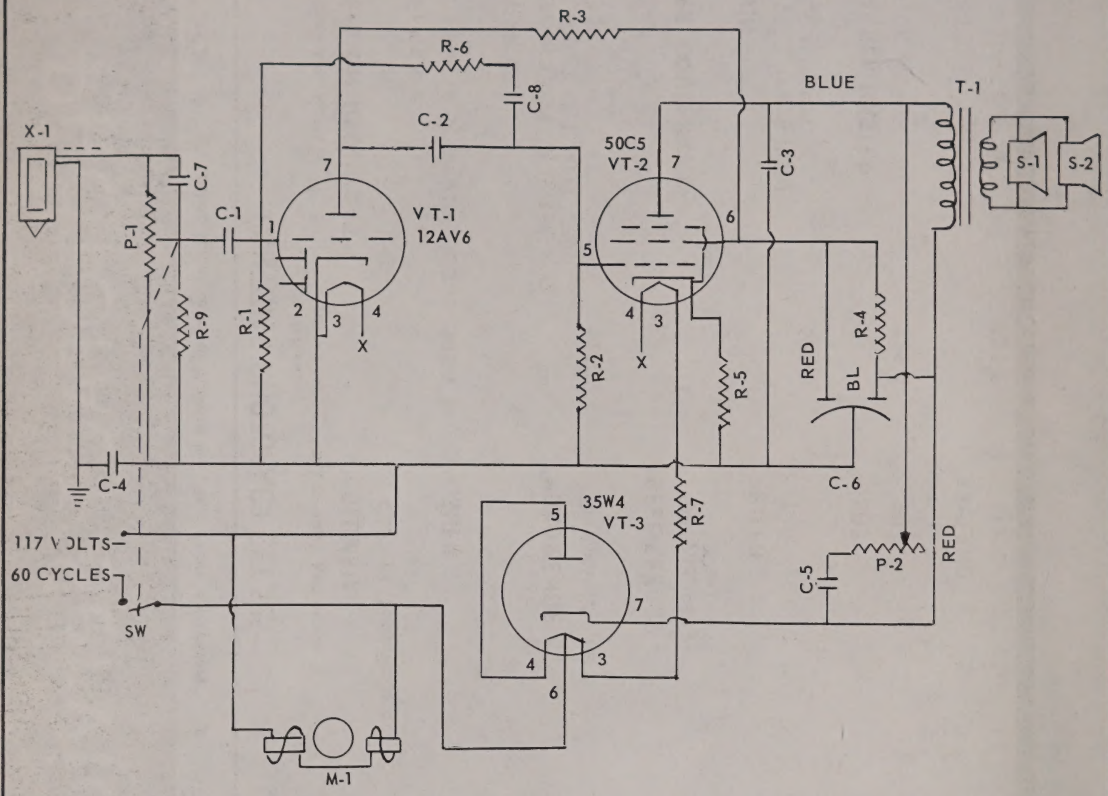
This Servicer provides you with essential data on other models or special equipment not covered in standard PHOTOFACT folders. The schematics and supplementary data included here will be of valuable help to you in servicing this equipment.

IN THIS ISSUE OF THE SERVICER:

Airline Models
GAA-2508A, B, C,
GAA-2509A, B, C

Airline Models
JWR-868A,
JWR-894A

Bell Sound Models
5682M, 5686M



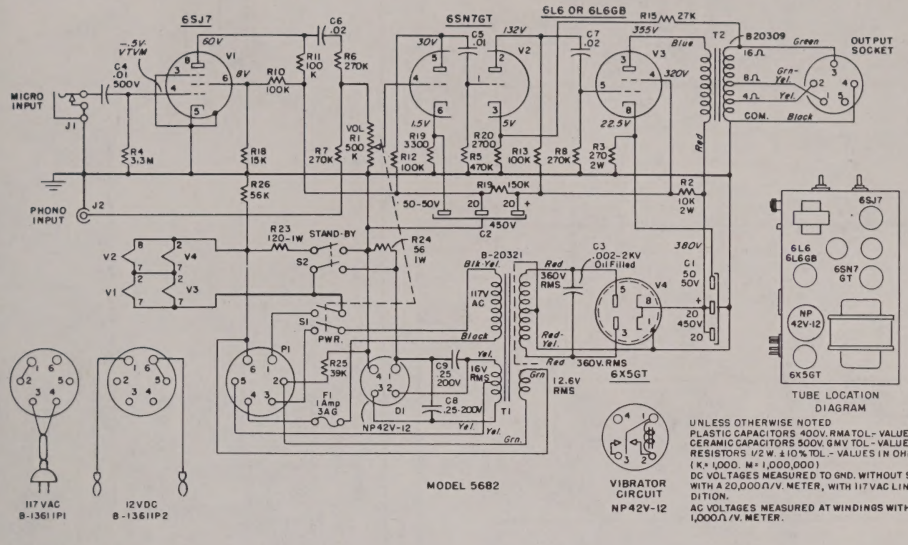
PARTS LIST

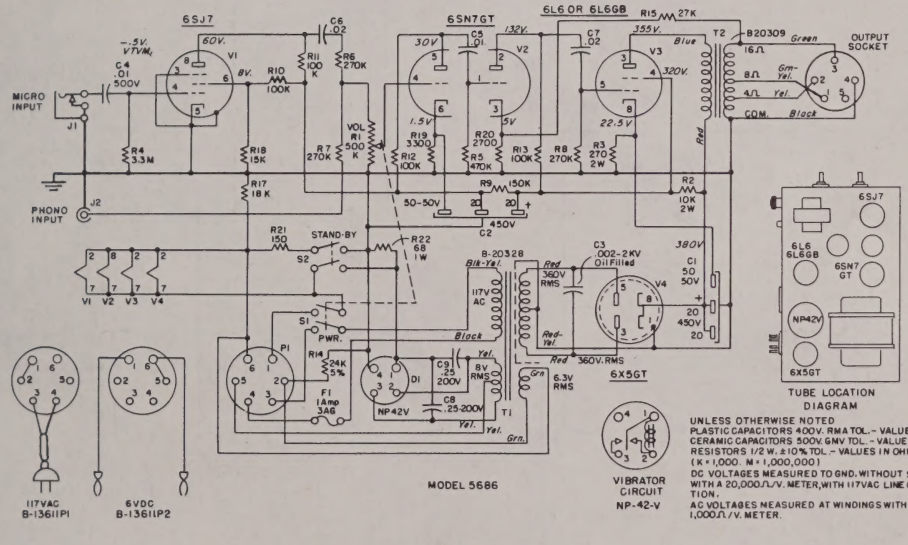
REF. NO.	PART NO.	DESCRIPTION
R3		Resistor 270K Ohm 1/2 Watt, 10%
R9		Resistor 560K Ohm 1/2 Watt, 10%
R5		Resistor 150 Ohm 1/2 Watt, 10%
R6		Resistor 5.6 Megohm 1/2 Watt, 10%
R2		Resistor 470K 1/2 Watt, 20%
R4		Resistor 4700 Ohm 1/2 Watt, 20%
C7,C8		Capacitor 47MMFD (Disc)
C4		Capacitor .06 MFD 200 W
C6	12018	Capacitor 80, 20MFD 150 W
	12126-3C	Knob

REF. NO.	PART NO.	DESCRIPTION
C1,2,3		Capacitor .01 MFD (Disc)
P2	12599	Potentiometer 50K
S1	12712	Speaker 4 x 6
X-1		Astatic Cartridge 81T with Needle. Use 60-59
R7	13063	Resistor 180 Ohm 7 Watt
P1-SW1	13069	Potentiometer 2 Meg with Switch
S2	13087	Speaker 4" with Transformer
M-1	13205	Motor 4 Speed with Turntable (Alliance)

AIRLINE MODELS JWR-868A, JWR-894A

Schematic Diagram Courtesy of Montgomery Ward & Co.

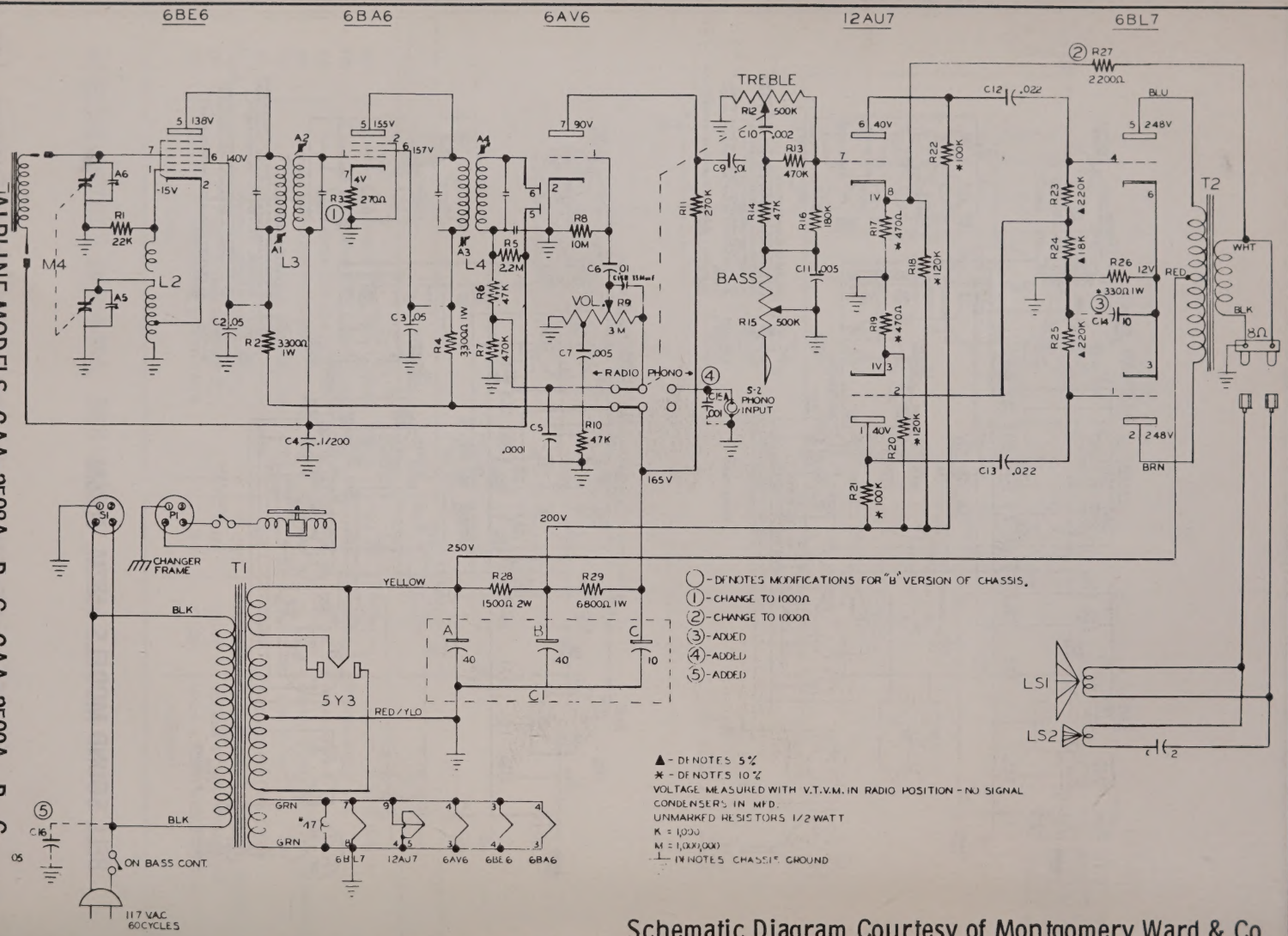

6SJ7
6SN7GT
6L6 OR 6L6GB
OUTPUT SOCKET
MICRO INPUT
PHONO INPUT
STAND-BY
PWR.
MODEL 5682
117 VAC B-13611P1
12VDC B-13611P2
TUBE LOCATION DIAGRAM
VIBRATOR CIRCUIT NP42V-12
UNLESS OTHERWISE NOTED
PLASTIC CAPACITORS 400V. RMA TOL.- VALUES IN MFD.
CERAMIC CAPACITORS 500V. GMV TOL.- VALUES IN MFD.
RESISTORS 1/2 W. ±10% TOL.- VALUES IN OHMS.
(K=1,000. M=1,000,000)
DC VOLTAGES MEASURED TO GND. WITHOUT SIGNAL, WITH A 20,000Ω/V. METER, WITH 117VAC LINE CONDITION.
AC VOLTAGES MEASURED AT WINDINGS WITH A 1,000Ω/V. METER.



BELL SOUND MODELS 5682M, 5686M

Schematic Diagram Courtesy of Bell Sound Systems, Inc.

AIRLINE MODELS GAA-2508A, B, C, GAA-2509A, B, C



◯ - DENOTES MODIFICATIONS FOR "B" VERSION OF CHASSIS.
① - CHANGE TO 1000Ω
② - CHANGE TO 1000Ω
③ - ADDED
④ - ADDED
⑤ - ADDED

▲ - DENOTES 5%
* - DENOTES 10%
VOLTAGE MEASURED WITH V.T.V.M. IN RADIO POSITION - NO SIGNAL
CONDENSERS IN MFD.
UNMARKED RESISTORS 1/2 WATT
K = 1,000
M = 1,000,000
⊥ DENOTES CHASSIS GROUND

Schematic Diagram Courtesy of Montgomery Ward & Co.

PHOTOFACT® Folder

HOFFMAN MODELS K1919, T1919, W1919 (Ch. 355)

HOFFMAN MODELS K1919, T1919, W1919 (Ch. 355)

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

MODEL K1919 (CH. 355)

HOFFMAN MODELS K1919, T1919, W1919 (Ch. 355)

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

PHOTOFACT® Folder

HOFFMAN MODELS K1919, T1919, W1919 (Ch. 355)

HOFFMAN MODELS K1919, T1919, W1919 (Ch. 355)

MODEL K1919 (CH. 355)

TRADE NAME	Hoffman Model K1919, T1919, W1919 (Ch. 355)
MANUFACTURER	Hoffman Electronics Corp., Consumer Products Div., 6200 S. Avalon Blvd., Los Angeles, Calif.
TYEE SET	Television Receiver
TUBES	VHF - Sixteen
POWER SUPPLY	110 - 120 Volts AC, 60 Cycle RATING VHF - 160 Watts, 1.5 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

SERVICING IN THE FIELD

SAFETY GLASS REMOVAL

The safety glass is an integral part of the picture tube.

FUSE DEVICE

A Circuit Breaker is used for low voltage power supply protection, and may be reset by depressing the reset button. (For location, see "Tube Placement Chart".)

TUNER OSCILLATOR ADJUSTMENT

To touch up the VHF Oscillator, remove Channel Selector and Fine Tuning knobs.

AGC

The AGC may be varied by means of an AGC Control. (For location, see "Tube Placement Chart".)

FOCUS

The focus may be varied by connecting the lead from pin 4 of the picture tube to various voltage points. (For location, see photo "Cabinet - Rear View".)

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

The Horizontal Frequency Slug is used for the Horizontal Hold. (For location, see "Tube Placement Chart".)

WIDTH

The width may be varied by a Width Switch. (For location, see "Tube Placement Chart".)

HORIZONTAL DRIVE

The horizontal drive may be varied by a Horizontal Drive Control. (For location, see "Tube Placement Chart".)

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

HORIZONTAL LINEARITY

A piece of tin foil is taped to the neck of the picture tube for correct linearity. Remove foil and use with new picture tube when picture tube replacement is necessary.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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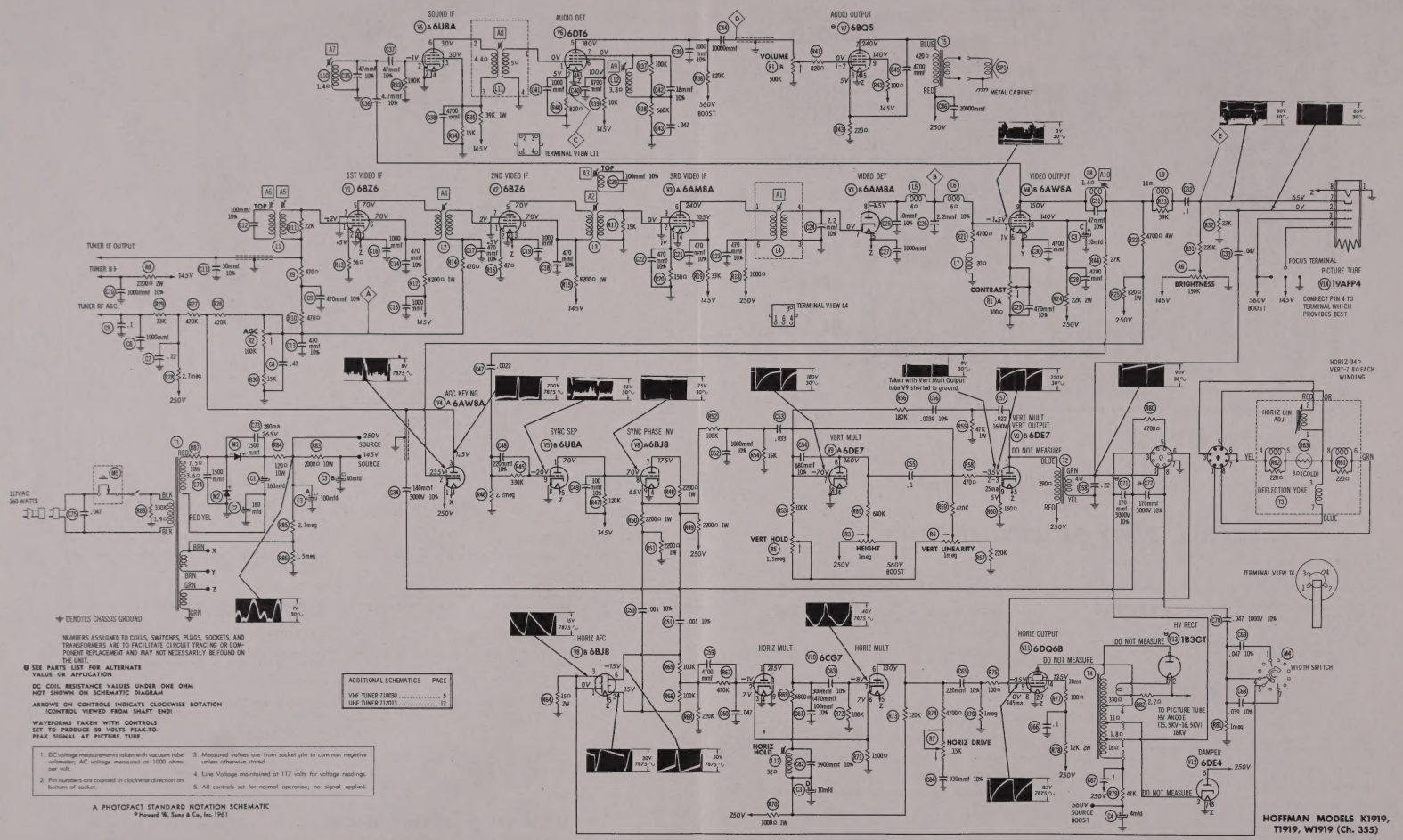
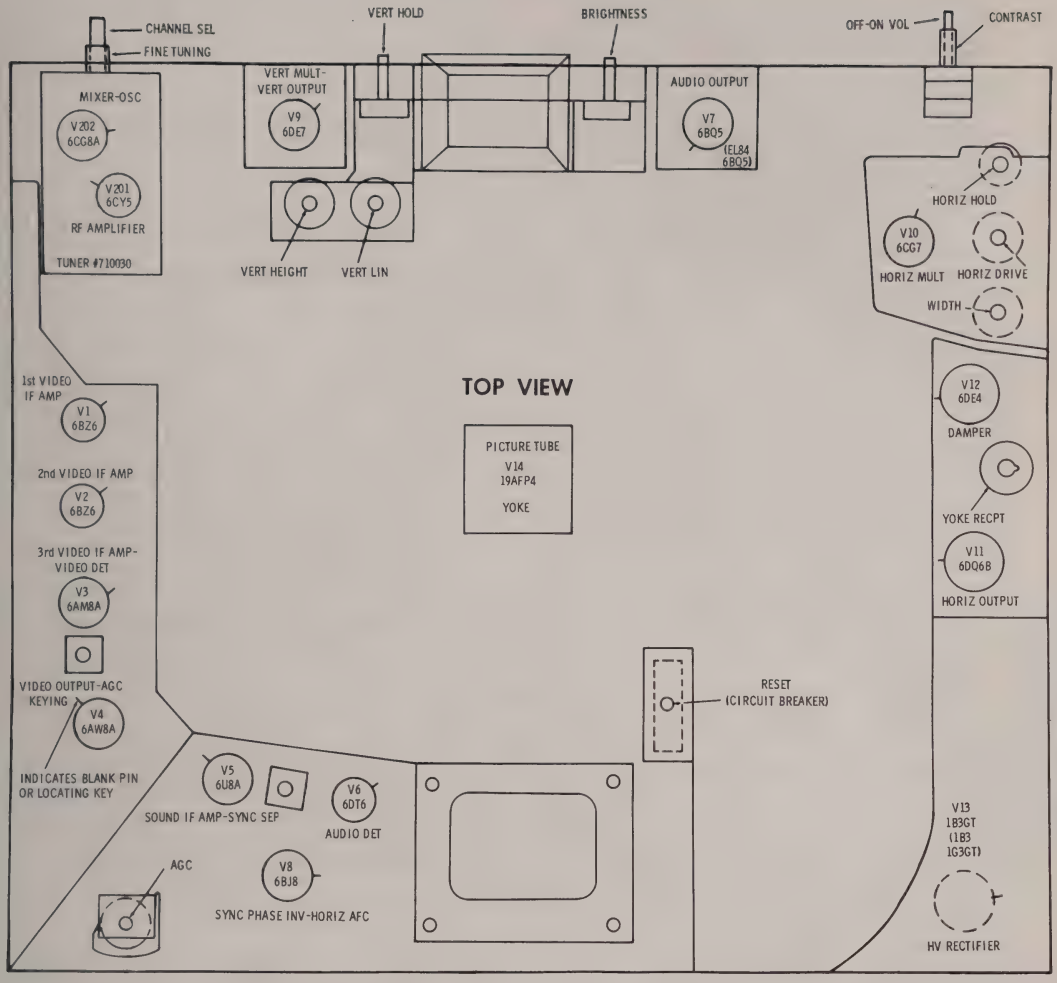
KA562

DATE 4-61 SET 525 FOLDER 1

SET 525 FOLDER 1


SOUND IF
Y5 A 6U8A
AUDIO DET
Y9 6DT6
AUDIO OUTPUT
Y7 6BQ5
VOLUME
METAL CABINET
1ST VIDEO IF
Y1 6BZ6
2ND VIDEO IF
Y2 6BZ6
3RD VIDEO IF
Y3 A 6AM8A
VIDEO DET
Y3 B 6AM8A
VIDEO OUTPUT
W1 A 6AW8A
TUNER IF OUTPUT
TUNER B+
TUNER RF AGC
AGC
CONTRAST
BRIGHTNESS
FOCUS TERMINAL
PICTURE TUBE
Y14 19AFP4
CONNECT PIN 4 TO TERMINAL WHICH PROVIDES BEST
AGC KEYING
Y4 A 6AW8A
SYNC SEP
Y5 B 6U8A
SYNC PHASE INV
Y8 A 6BJ8
VERT MULT
Y9 A 6DE7
VERT MULT OUTPUT
Y5 B 6DE7
DO NOT MEASURE
VERT HOLD
HEIGHT
VERT LINEARITY
HORIZ AFC
Y8 B 6BJ8
HORIZ MULT
Y10 6CG7
HORIZ MULT
HORIZ OUTPUT
Y11 6DQ6B
DO NOT MEASURE
HV RECT
Y13 1B3GT
TO PICTURE TUBE HV ANODE (15.5KV-16.5KV) 16KV
HORIZ DRIVE
HORIZ HOLD
DAMPER
Y12 6DE4
DO NOT MEASURE
HORIZ LIN ADJ.
DEFLECTION YOKE
HORIZ-540 VERT-7,840 EACH WINDING
TERMINAL VIEW T4
TERMINAL VIEW L11
TERMINAL VIEW L4
117VAC 180 WATTS
250V SOURCE
145V SOURCE
W10TH SWITCH
DENOTES CHASSIS GROUND
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
ADDITIONAL SCHEMATICS PAGE
VHF TUNER 710X30 5
UHF TUNER 712X13 12
1. DC voltage measurements taken with vacuum tube voltmeter. AC voltage measured at 1000 ohms per volt.
2. Pin numbers are counted in clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line Voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation; no signal applied.
A PHOTOFACT STANDARD NOTATION SCHEMATIC
© Howard W. Sams & Co., Inc. 1961
HOFFMAN MODELS K1919, T1919, W1919 (Ch. 355)

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound Circuit Breaker, Rectifiers (B+)

SWEEP FAILURE
No raster, has sound V10, V11, V12, V13, V14
No vertical deflection V9
Poor vert. linearity or foldover V9
Poor horiz. linearity or foldover V10, V11, V12
Narrow picture V10, V11, V12, Rectifiers (B+)
Vert. off freq. V9
Horiz. off freq. V8, V10

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, V4
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V14
Has pic, no sound V5, V6, V7
Overloaded picture V4

SYNC FAILURE
No vert. sync V5, V8
No horiz. sync V5, V8
No vert. or horiz. sync V5, V8

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Connect bias as under "Video IF Alignment".
Suggested Alignment Tools: GENERAL CEMENT #8282, 8606, 8606L, 9295
WALSCO #2526, 2543, 2544, 2545

VIDEO IF ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough generator output to provide a usable indication on VTVM.
Use only enough sweep generator output to provide a usable pattern on scope.
Connect the negative lead of a 3 volt bias supply to point Ⓐ. Positive to chassis.
Connect a 1000mmf capacitor across VTVM and scope leads.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Place a thin insulated metal strip between the Mixer-Osc. tube (V202), and tube shield. Connect the high side of sweep generator to the metal strip. Low side to chassis.	Not used	43.75MC	Set Selector Between Channels	USE VTVM DC probe thru 10K to point Ⓑ. Common to chassis.	A1	Adjust for maximum deflection.
2.	"	"	45.25MC	"	"	A2	"
3.	"	"	47.25MC	"	"	A3	Adjust for MINIMUM deflection.
4.	"	"	43.25MC	"	"	A4	Adjust for maximum deflection.
5.	"	"	43.75MC	"	"	A5	"
6.	"	"	47.25MC	"	"	A6	Adjust for MINIMUM deflection.
7.	"	"	45.5MC	"	"	Mixer Plate Coil	Adjust for maximum deflection.
8.	"	44.0MC (10MC Swp)	45.0MC 45.75MC	"	Vert. Amp. thru 10K to point Ⓑ. Low side to chassis.		Check for response similar to Fig. 1. If necessary, retouch A1, A2 and A4 for desired response.

SOUND IF ALIGNMENT

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
9.	High side thru .005mfd to point Ⓑ. Low side to chassis.	4.5MC (Unmod)	Between channels	DC probe thru 10K to point Ⓒ. Common to chassis.	A7, A8	Detune A9 by turning core fully clockwise. Adjust A7 and A8 for maximum deflection. Reduce the signal generator output to keep meter reading between 3.5 and 4.5 volts at all times.
10.	"	"	"	DC probe thru 10K to point Ⓓ. Common to chassis	A9	Increase generator output to maximum and adjust A9 for MINIMUM deflection. Continue turning core counter-clockwise until meter reads from 97 to 103 volts.
11.	Tune in a TV station and if necessary, retouch A9 SLIGHTLY for undistorted sound.					

4.5MC TRAP ALIGNMENT

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
12.	High side thru .005mfd to point Ⓑ. Low side to chassis.	4.5MC (Unmod)	Between Channels	RF probe to point Ⓔ. Common to chassis.	A10	Adjust for MINIMUM deflection.

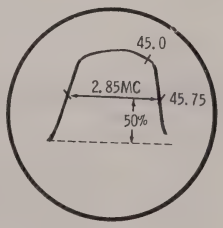
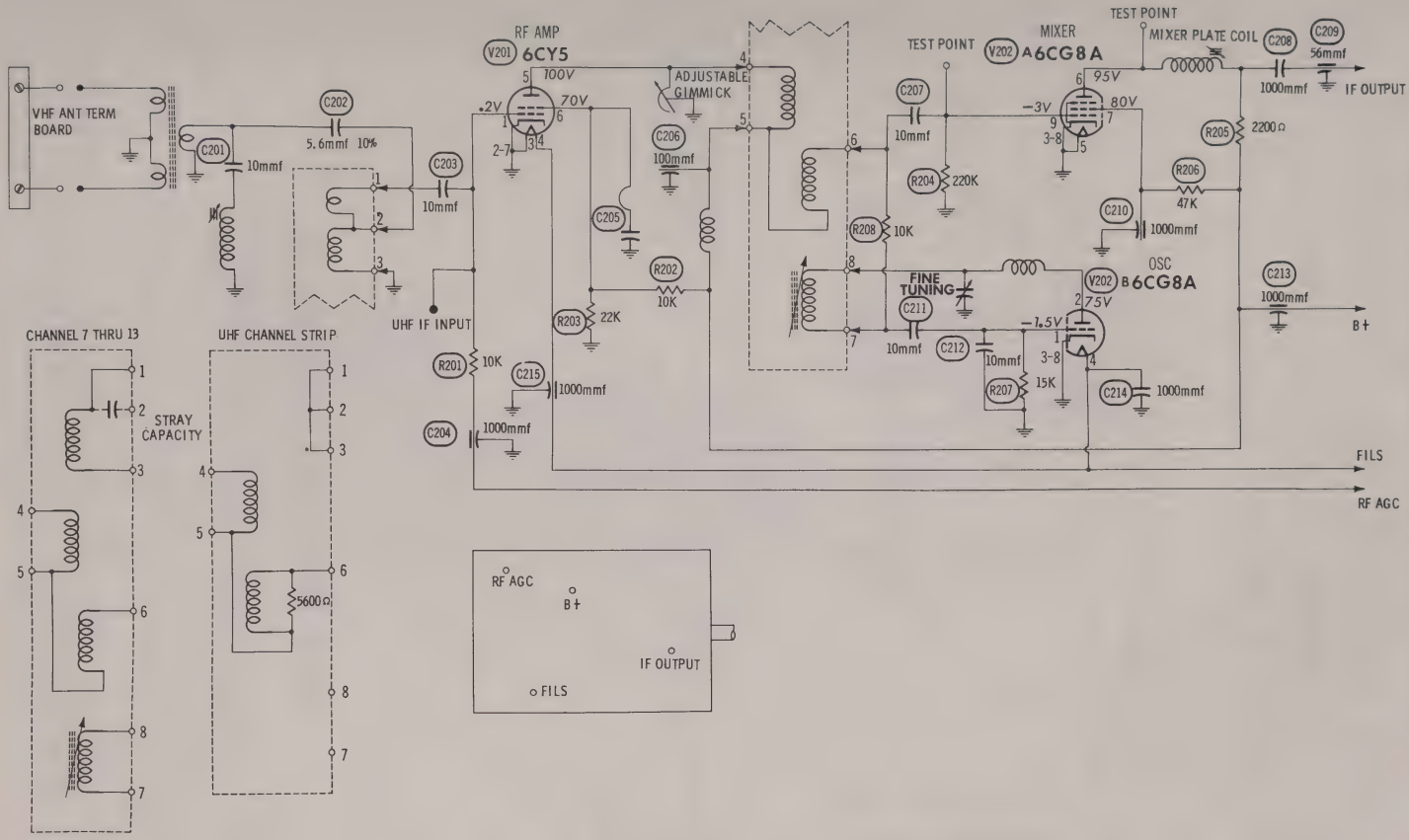


FIG. 1



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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VHF TUNER 710030

HOFFMAN MODELS K1919, T1919, W1919 (Ch. 355)

TUNER PARTS LIST AND DESCRIPTIONS

710030

TUBES

• GENERAL ELECTRIC • RAYTHEON • SYLVANIA •					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V201	RF Amplifier	6CY5	V202	Mixer - Osc.	6CG8A

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	10		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C202	5.6 10%							
C203	10		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C204	1000		EF-001	MFT-1000		CCF-102	CT280A	
C205								
C206	100		EF-0001	MFT-100		CCF-102	CT280A	
C207	10		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C208	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C209	56							
C210	1000		EF-001	MFT-1000		CCF-102	CT280A	
C211	10		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C212	10		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C213	1000		EF-001	MFT-1000		CCF-102	CT280A	
C214	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C215	1000		EF-001	MFT-1000		CCF-102	CT280A	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R201	10K				R205	2200Ω			
R202	10K				R206	47K			
R203	22K				R207	15K			
R204	220K				R208	10K			

TUNER ALIGNMENT INSTRUCTIONS

TUNER ALIGNMENT

Suggested Alignment Tools: GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532

VHF OSCILLATOR ALIGNMENT

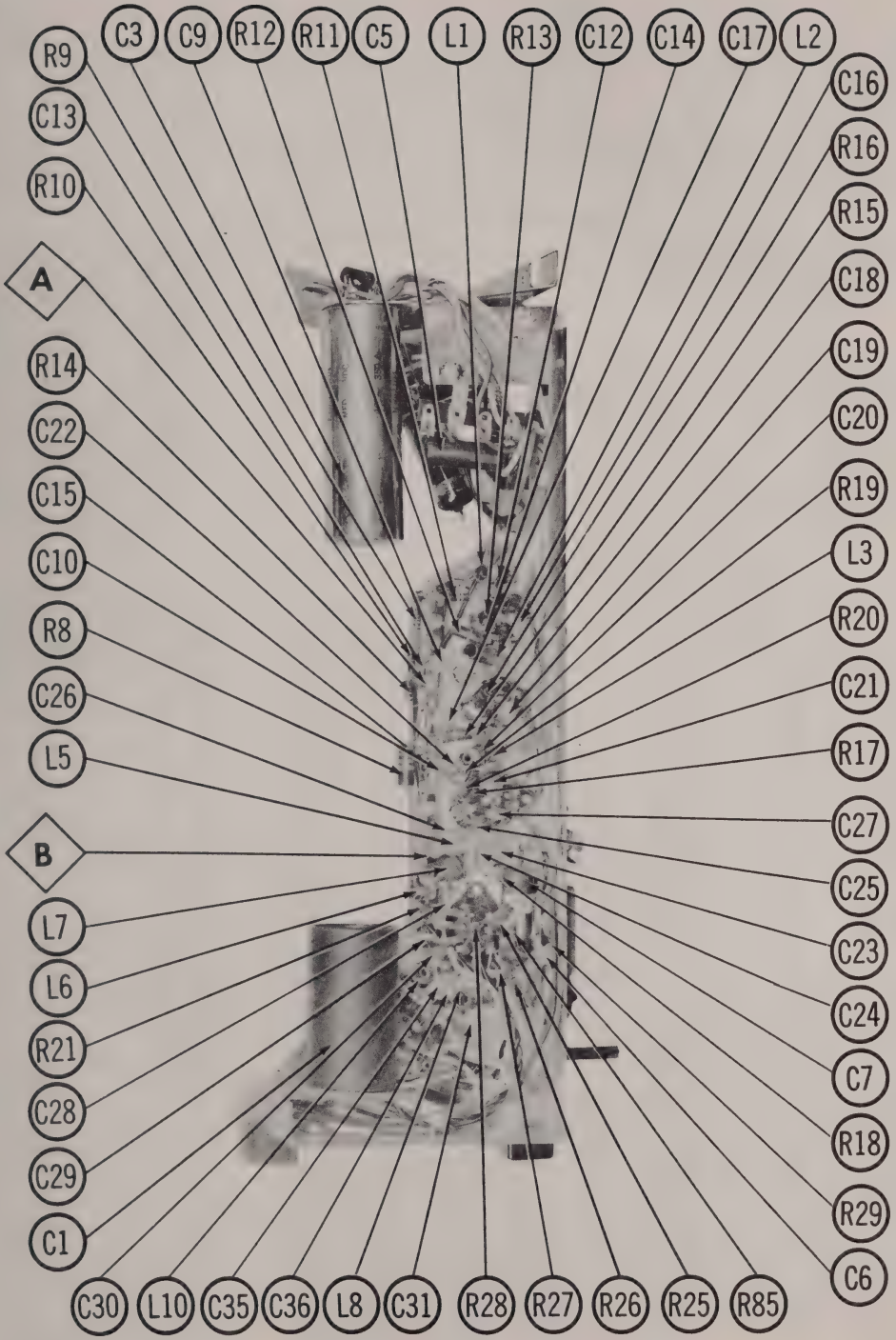
The individual channel adjustment screws are accessible one at a time, thru a hole in the front of the tuner, as the channel selector is rotated. Set the Fine Tuning to the center of its range and switch to channel to be adjusted and adjust for best picture and sound.

VHF RF AND MIXER ALIGNMENT

This portion of the tuner has been properly aligned at the factory and is very stable. Alignment of this portion should not be attempted in the field.

UHF TUNER ALIGNMENT

This portion of the tuner has been properly aligned at the factory and is very stable. Alignment of this portion should not be attempted in the field.



CHASSIS BOTTOM VIEW - VIDEO SECTION

SET 525 FOLDER 1

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No	GENERAL ELECTRIC • RAYTHEON • SYLVANIA • USE	TYPE
V1	1st Video IF Amp.	6BZ6
V2	2nd Video IF Amp.	6BZ6
V3	3rd Video IF Amp. - Video Detector	6AM8A
V4	Video Output - AGC Keying	6AW8A
V5	Sound IF Amp. - Sync Sep.	6U8A
V6	Audio Detector	6BZ6
V7	Audio Output	6BQ5 (EL84/6BQ5) *
V8	Sync Phase Inv. - Horiz. AFC	6BJ8
V9	Vert. Mult. - Vert. Output	6DE7
V10	Horiz. Mult.	6CG7
V11	Horiz. Output	6DQ6B
V12	Damper	6DE4
V13	HV Rectifier	1B3GT (1B3/3G3GT) *

* Alternate

PICTURE TUBE

ITEM No.	REPLACEMENT DATA: HOFFMAN PART No	GENERAL ELECTRIC PART No	RCA PART No	RAYTHEON PART No	SYLVANIA PART No	NOTES
V14	19AFP4		19AFP4 ①		19AFP4 ②	① Aluminized ② Silver Screen "85"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING: CAP.	VOLT.	HOFFMAN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1	160	200	857305	AFH3L-37-25	XA0366	FP131	TMS-1400	TVL-1473	
C2	160	200	857305	AFH3L-37-25	XA0366	FP131	TMS-1400	TVL-1473	
C3A	400	350	857104	AFH4-05-60	D0044	FP435.6	TMQ-4310	TVL2-4635.104	
B	40	350							
C	10	350							
D	10	350							
C4	4	600	856023	PRS845	BRHV804		TD-8-600	TVA-1962	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	.1	200V			P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-301	2TM-P10
C6	1000				BPD-001	DD-102	BYA10DX	CCD-102	B-210	5HK-D10
C7	.22	200V			P288N-22		CUB2P22	2DP-4-224	GEM-3022	2TM-P22
C8	.47	200V			P288N-47		CUB2P47	2DP-5-474	GEM-3047	2TM-P47
C9	470		10%		DI-470	DD-471	5HS747	CCD-471	GP347	10TS-T47
C10	1000		10%		DI-1000	DD-102	PMSD1	CCD-102	GP210	10TS-D10
C11	30		10%		DI-30	DD-300	LDQ300	CCD-300	GP430	10TS-Q30
C12	180		10%		1469-0001	TCZ-100	22HS71	CM-19B-101K	MCB235	MS-31
C13	470		10%		DI-470	DD-471	5HS747	CCD-471	GP347	10TS-T47
C14	470		10%		DI-470	DD-471	5HS747	CCD-471	GP347	10TS-T47
C15	1000				BPD-001	DD-102	BYA10DX	CCD-102	B-210	5HK-D10
C16	1000				BPD-001	DD-102	BYA10DX	CCD-102	B-210	5HK-D10
C17	470		10%		DI-470	DD-471	5HS747	CCD-471	GP347	10TS-T47
C18	470		10%		DI-470	DD-471	5HS747	CCD-471	GP347	10TS-T47
C19	1000				BPD-001	DD-102	BYA10DX	CCD-102	B-210	5HK-D10
C20	100		10%		1469-0001	TCZ-100	22HS71	CM-19B-101K	MCB235	MS-31
C21	470		10%		DI-470	DD-471	5HS747	CCD-471	GP347	10TS-T47
C22	470		10%		DI-470	DD-471	5HS747	CCD-471	GP347	10TS-T47
C23	470		10%		DI-470	DD-471	5HS747	CCD-471	GP347	10TS-T47
C24	3.3		10%		NPO-SI 2. 2	TCZ-3R3	C10V33C	CCTO-3R3	CNO-532	10TCC-V32
C25	10		10%		NPO-SI 10	D6-100	LJ0Q1	CCD-100	GP410	10TS-Q10
C26	3.3		10%		NPO-SI 2. 2	TCZ-3R2	C10V32C	CCTO-3R2	CNO-532	10TCC-V32
C27	1000				BPD-001	DD-102	BYA10DX	CCD-102	B-210	5HK-D10
C28	4700				BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C29	470		10%		DI-470	DD-471	5HS747	CCD-471	GP347	10TS-T47
C30	4700				BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C31	47		10%		DI-47	DD-470	LJ0Q47	CCD-470	GP447	10TS-Q47
C32	.1	400V			P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C33	.047	200V			P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C34	140	3000V	10%							
C35	47		10%	#850115	DI-47	DD-470	LJ0Q47	CCD-470	GP447	10TS-Q47
C36	4.7		10%		NPO-SI 4. 7	TCZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C37	47		10%		DI-47	DD-471	LJ0Q47	CCD-470	GP447	10TS-Q47
C38	4700				BPD-0047	DD-471	BYA10D47M	CCD-472	B-247	5HK-D47
C39	1000		10%		DI-1000	DD-102	5RSD2	CCD-102	GP210	10TS-D10
C40	4700				BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C41	1000				BPD-001	DD-102	BYA10DX	CCD-102	B-210	5HK-D10
C42	18		10%		DI-18	DD-180	LJ0Q18	CCD-180	GP418	10TS-Q18
C43	.047	200V			P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C44	10000				BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C45	4700				BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C46	20000				BPD-03	DD-203	BYB5S2	CCD-203	B-120	5HK-S20
C47	.0022	400V			P488N-0022	D6-222	CUB6D22	6DP-1-222	GEM-622	6TM-D22
C48	220		10%		DI-220	DD-221	LJ0T22	CCD-221	GP322	10TS-T22
C49	100		10%		DI-100	DD-101	LJ0T1	CCD-101	GP310	10TS-T10
C50	.001	400V	10%		V94C8DI-10%		PMSD1	6DP-1-102	GEM-4121	6TM-D10
C51	.001	400V	10%		V94C8DI-10%		PMSD1	6DP-1-102	GEM-4121	6TM-D10
C52	1000		10%		DI-1000	DD-102	PMSD1	CCD-102	GP210	10TS-D10
C53	.033	400V			P488N-033	DD-333	CUB6S33	6DP-3-333	GEM-4133	6TM-S33
C54	680		10%		DI-680	DD-681	5HS768	CCD-681	GP368	10TS-T68
C55	.1	600V			P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P10
C56	.0039	600V	10%		P684CM-0039		DPM6S39	6DP-1-392	JL-239	6PS-D39
C57	.012	1600V			P168N-022		CUB16S22	16DP-5-223	GEM-1612	M3-S22
C58	.22	200V			P288N-22		CUB2P22	2DP-4-224	GEM-3022	2TM-P22
C59	.47				BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C60	.047	200V			P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C61	100		10%		1469-0001	TCZ-100	22HS71	CM-19B-101K	MCB235	MS-31
C62	3900		10%		1484-0039		12HS39	CM-19B-392K	MCJ462.5	M3-S39
C63	300		10%	† (470)	1469-0003	TCZ-300	22HS73	CM-19B-301K	MCB241	M3-33
C64	330		10%		1469-00033		22HS733	CM-19B-331K	MCB241	M3-333
C65	220		10%		DI-220	DD-221	LJ0T22	CCD-221	GP322	10TS-T22
C66	.1	600V			P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P10
C67	.1	600V			P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P10
C68	.039	200V	10%		P684CM-039		DPM6S39	6DP-3-393	GEM-1614	6PS-S39

FIXED CAPACITORS (cont)

ITEM No	RATING			REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C69	.047	1000V	10%		V84C3847-10%		PM3847	4DP-3-473	GEM-1615	2TM-S47
C70	.047	1000V	10%				PM10847	16DP-5-473	GEM-1615	10TM-S47
C71	170	3000V	10%	▲						
C72	170	3000V	10%	▲						
C73	1500				BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C74	1500				BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C75	057	600V			P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47

\# Hoffman Part Number.
▲ Some versions may use 130mmf @ 3000V (Pt. #850015).
† Alternate Value.

CONTROLS

ITEM No.	RATING: RESISTANCE	WATTS	REPLACEMENT DATA: HOFFMAN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	200Ω	½	803060	F1-0	RTY-728	QJ-1523	UE4309-8	Contrast
B	500K	½		R3-41				Volume
C	Switch			KN-1				Power Off-On
R2A	100K	½	800086	B-40	A47-100K-S	Q31-128	U41	AGC
B	Shaft			Not Req.	K38-3	Not Req.	Not Req.	
R3A	1meg	½	800087	TT-59	B47-1meg-S	Bil-137	TA16L	Height
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	
R4A	1meg	½	800087	TT-59	B47-1meg-S	Bil-137	TA16L	Vert. Linearity
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	
R5A	1.5meg	½	800083	B-742	A47-1.5meg-S	Q31-138	U155	Vert. Hold
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R6A	150K	½	800083	B-43	A47-150K-S	Q31-128	U43	Brightness
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R7A	15K	½	800085	B-20	A47-15K-S	Bil-118	TA15L	Horiz. Drive
B	Shaft			Not Req.	RS-2	TM4	Not Req.	

† "CONCENTRIKIT" Equivalent: K-15 Kit with Base Elements and Shafts: Bil-103, P17-028 (Panel) Bil3-133, RB-110 (Rear) 76-1 (Switch)
▪ "STA-LOC" Equivalent: FA32L, RU55A, OF875, IR375, U841.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	WORKMAN TV PART No.	REMARKS
R8	2200Ω 2W			
R9	470Ω			
R10	470Ω			
R11	22K			
R12	8200Ω 1W			
R13	56Ω			
R14	470Ω			
R15	8200Ω 1W			
R16	47Ω			
R17	15K			
R18	1000Ω			
R19	33K			
R20	150Ω			
R21	8200Ω			
R22	4700Ω 4W	PWS-4700	4G-4700	#818493
R23	39K			
R24	22K 2W			
R25	620Ω 1W			
R26	470K			
R27	470K			
R28	2.7meg			
R29	33K			
R30	15K			
R31	220K			
R32	22K			
R33	100K			
R34	15K			
R35	39K 1W			
R36	820K			
R37	100K			
R38	560K			
R39	10K			
R40	820Ω			
R41	820Ω			
R43	100Ω			
R43	220Ω			
R44	27K			
R45	330K			
R46	2.2meg			
R47	120K			
R48	2200Ω 1W			

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	WORKMAN TV PART No.	REMARKS
R49	2200Ω 1W			
R50	2200Ω 1W			
R51	2200Ω 1W			
R52	100K			
R53	100K			
R54	15K			
R55	47K 1W			
R56	180K			
R57	220K			
R58	470Ω			
R59	470K			
R60	150Ω			
R61	220Ω			
R62	220Ω			
R63	3Ω (Cold)			
R64	15Ω 2W			
R65	100K			
R66	100K			
R67	470K			
R68	220K			
R69	5800Ω			
R70	1000Ω 1W			
R71	1500Ω			
R72	100K			
R73	120K			
R74	4700Ω			
R75	100Ω			
R76	1meg			
R77	100Ω			
R78	12K 2W			
R79	47K			
R80	4700Ω			
R81	1meg			
R82	2.2Ω			
R83	2200Ω 10W	PW10-2000	10W SQ 2000	#825439
R84	120Ω 10W	PW10-120	10W SQ 120	#825381
R85	2.7meg			
R86	1.5meg			
R87	7.5Ω 10W	FR 7.5	10W SQ 7.5	
R88	330K			
R89	680K			

\# Hoffman Part Number

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: HOFFMAN PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	NOTES
L1A	1st Video IF	763031	TV-134		*		
B	47.25MC Trap						
L2	2nd Video IF	762017	TV-130	6219	RTC-8551	T27	
L3A	3rd Video IF	763032		6332	RTC-8553	T225	
B	47.25MC Trap						
L4	4th Video IF	760019	TV-126	6334	RTC-8553	T211	
L5	RF Choke (6.8uh)	760014 ①	RC-585	4610	RTC-8530	T859	① IRC Part #CLA
L6	Peaking (100uh)	771008	TV-181	6112	RTC-8574	T305	
L7	Peaking (820uh)	771019	TV-207	6116	RTC-8598	T328	
L8	4.5MC Trap	762005	TV-151	1469	RTC-8602	T249	
L9	Peaking (220uh)	771012	TV-197	6194	RTC-8586	T312	
L10	1st Sound IF	763005	TV-131	1469	RTC-8602	T249	

COILS (RF-IF) (cont)

ITEM No.	USE	REPLACEMENT DATA: HOFFMAN PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	NOTES
L11	2nd Sound IF	760024	TV-113	6270	RTC-8545	T235	
L12	Quadrature	774001	TV-121	1480	RTC-8605	T251	

COILS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: HOFFMAN PART No.	Merit PART No.	Miller PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	Workman TV PART No.
L13	Horiz. Stabilizer	768020	TV-163	6211	RC110	RTC-8622	HS-5	WLC-35	T103

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	SEC. 1	SEC. 2	SEC. 3	SEC. 4	SEC. 5	REPLACEMENT DATA: HOFFMAN PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	117V @ 1.5A	120V @ .860A AC	6.3V @ .48A	6.3V @ 8.5A			716030					

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: HOFFMAN PART No.	Merit PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	Vert. Output	728010-2						
	Alt. Output	728010						
T3	Yoke (Horiz. 18MH)	790014		PCM-2017①	DY-27A ①	Y-48 ①	Y-60-1 ②	
	114° (Vert. 15MH)					FLY-100 *		
T4	Horiz. Output	782011						

① Remove Horiz. Damping Network. Connect same as original. Use original Rear Cover and Centering Device.
② Remove 470Ω Resistors connected across vertical windings. Remove Horiz. Damping Network.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

ORIGINAL TERMINAL CONNECTIONS	Merit Replacement Connections	Rogers Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
4				5	
3				4	
1				3	
2				1	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	SEC.	REPLACEMENT DATA: HOFFMAN PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T5	10.5K	3-4Ω	724038	A-2998	A-3679 ①	24S83	S-11X	① Drill new mounting hole(s).

SPEAKER

ITEM No.	TYPE: SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA: HOFFMAN PART No.	GUAM PART No.	NOTES
SP1	4"	PM	3-4Ω	708019	4A07	

POWER RECTIFIERS

ITEM No.	RATING: CURRENT (Measured)	REPLACEMENT DATA: HOFFMAN PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.280A	746003	1N1763	40H	SR500	
M2	.280A	746003	1N1763	40H	SR500	

MISCELLANEOUS

ITEM No.	PART NAME	HOFFMAN PART No.	NOTES
M3	Tuner	710030	VHF, STANDARD COIL REPLACEMENT #GG-4220A
	Tuner	712013	UHF (UHF Switch #714001)
	Kit (UHF)	438022	UHF Conversion, Complete
M4	Switch	903042	Width (Rotary Type)
M5	Circuit Breaker	953001	
M6	Antenna	926014	JFD REPLACEMENT #TA401, Model K1919
	Antenna	926016	JFD REPLACEMENT #TA401, Models T1919, W1919

HOFFMAN MODELS K1919, T1919, W1919 (Ch. 355)

FOLDER 1

PARTS LIST AND DESCRIPTIONS (Continued)

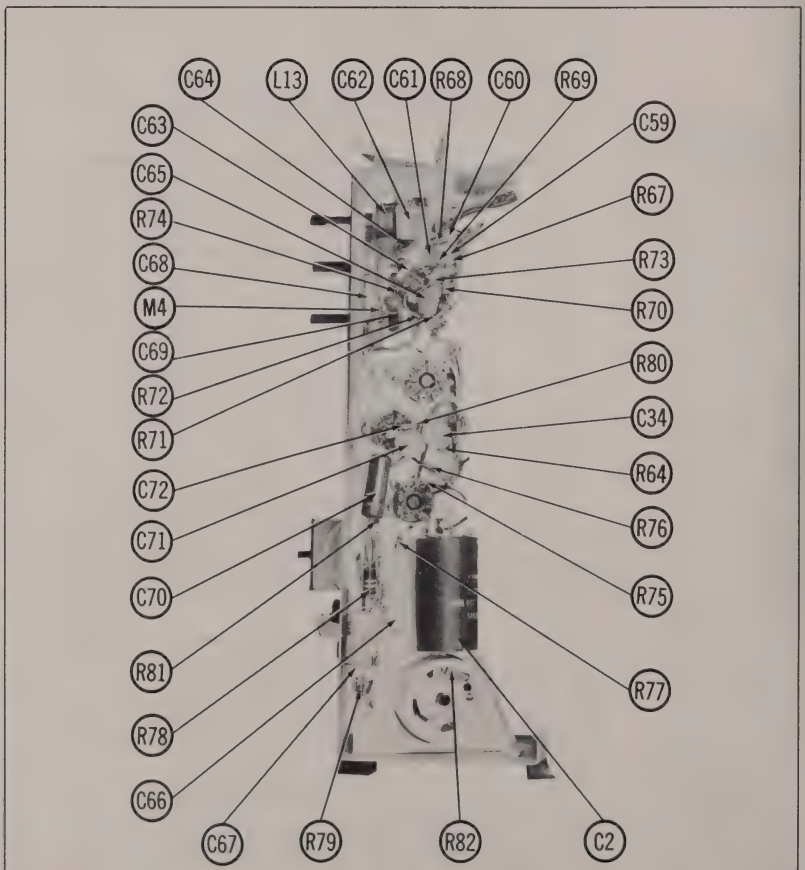
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

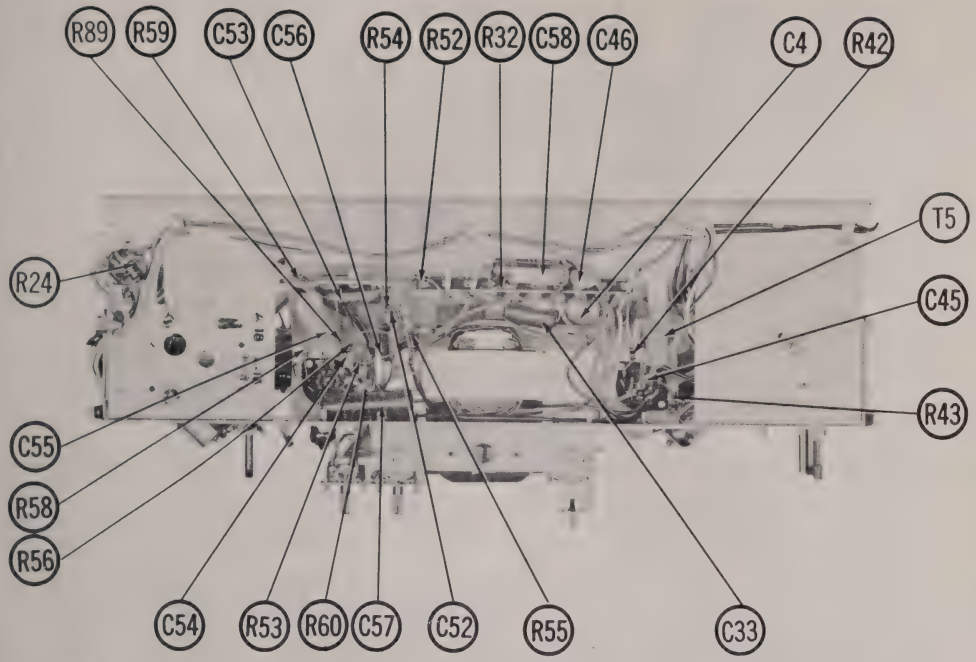
NAME	PART NO.	DESCRIPTION
Knob	480071	Channel Selector, Model K1919
Knob	480073	Channel Selector, Models W1919 and T1919
Knob	496015	Fine Tuning, Model K1919
Knob	496019	Fine Tuning, Models W1919 and T1919
Knob	508020	Volume, Model K1919
Knob	508022	Volume, Model W1919 and T1919
Knob	496016	Contrast, Model K1919
Knob	496020	Contrast, Models W1919 and T1919
Knob	500065	Brightness, Vert. Hold, Model K1919
Knob	500068	Brightness, Vert. Hold, Models W1919 and T1919
Handle	281004	Model K1919
Handle	281005	Model W1919
Handle	281006	Model T1919

WIRING DATA

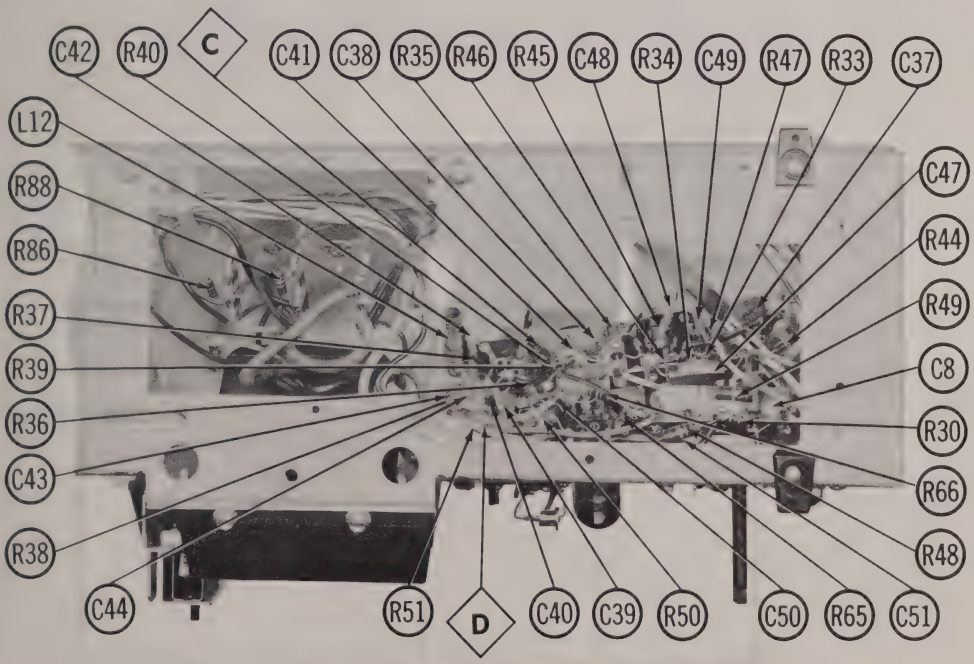
High Voltage Lead	Use BELDEN No.	8869
Shielded Hook-up Wire	Use BELDEN No.	8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No.	8874
300Ω Tuner Input Lead	Use BELDEN No.	8225
300Ω Antenna Lead-in	Use BELDEN No.	8230 or 8275
Antenna Rotor Cable	Use BELDEN No.	8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor



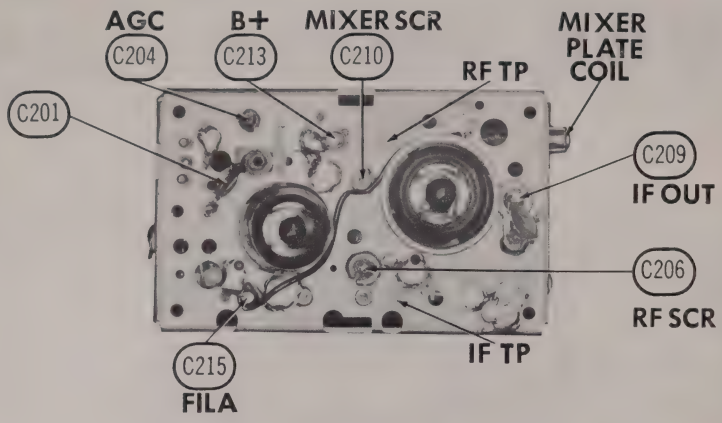
CHASSIS BOTTOM VIEW-HORIZONTAL SWEEP SECTION



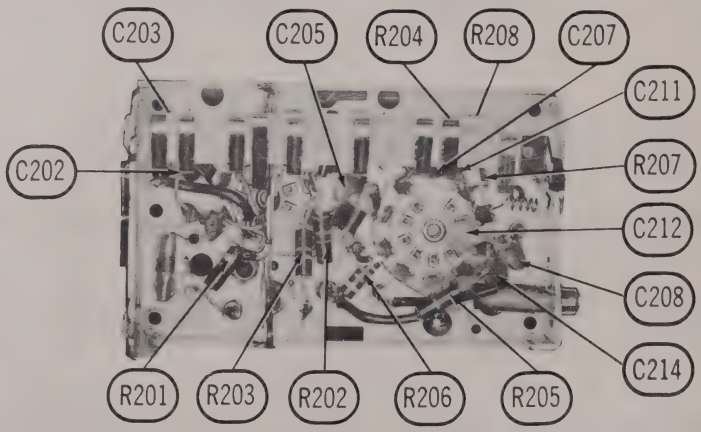
CHASSIS BOTTOM VIEW - VERT. SWEEP, AUDIO OUTPUT SECTION



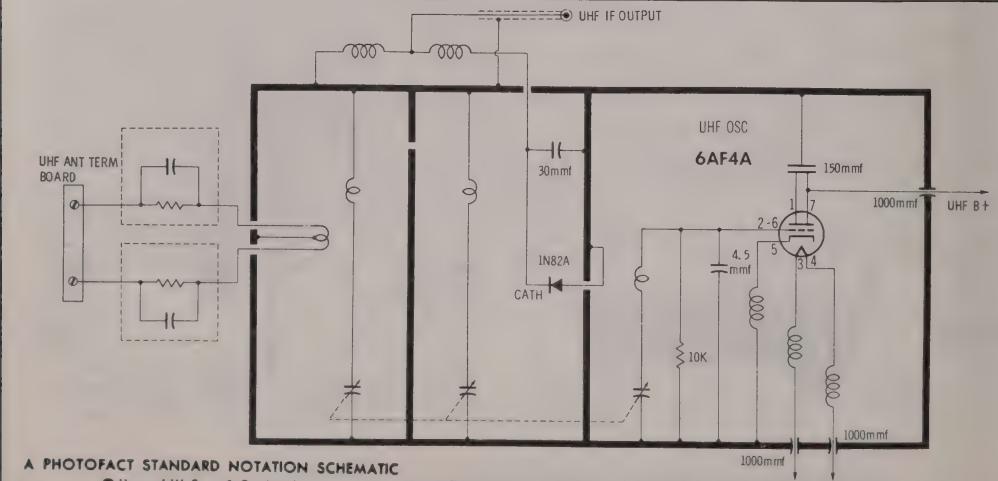
CHASSIS BOTTOM VIEW - LV SUPPLY, SOUND, SYNC SECTION



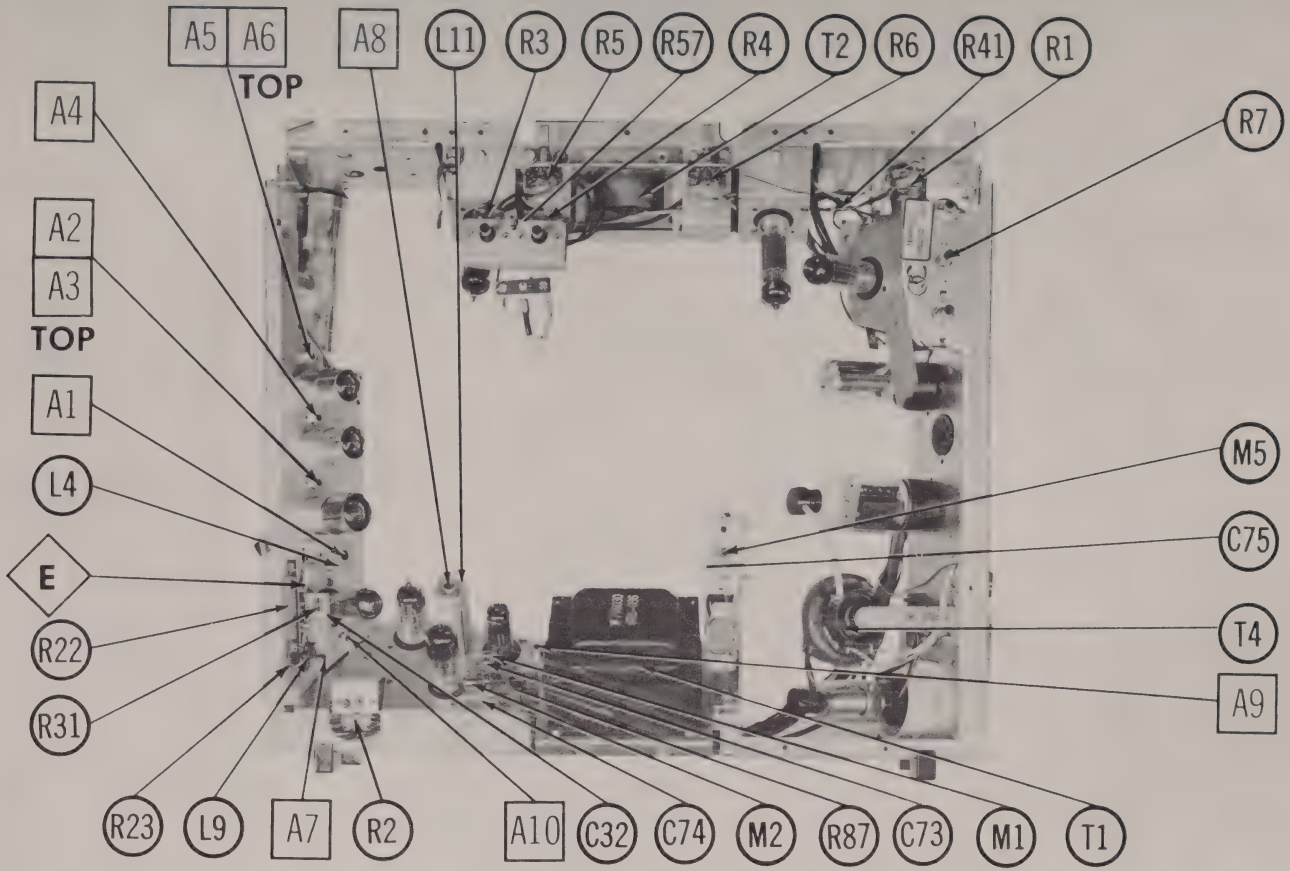
VHF TUNER 710030 - TOP VIEW



VHF TUNER 710030 - BOTTOM VIEW



UHF TUNER 712013



CHASSIS - REAR VIEW

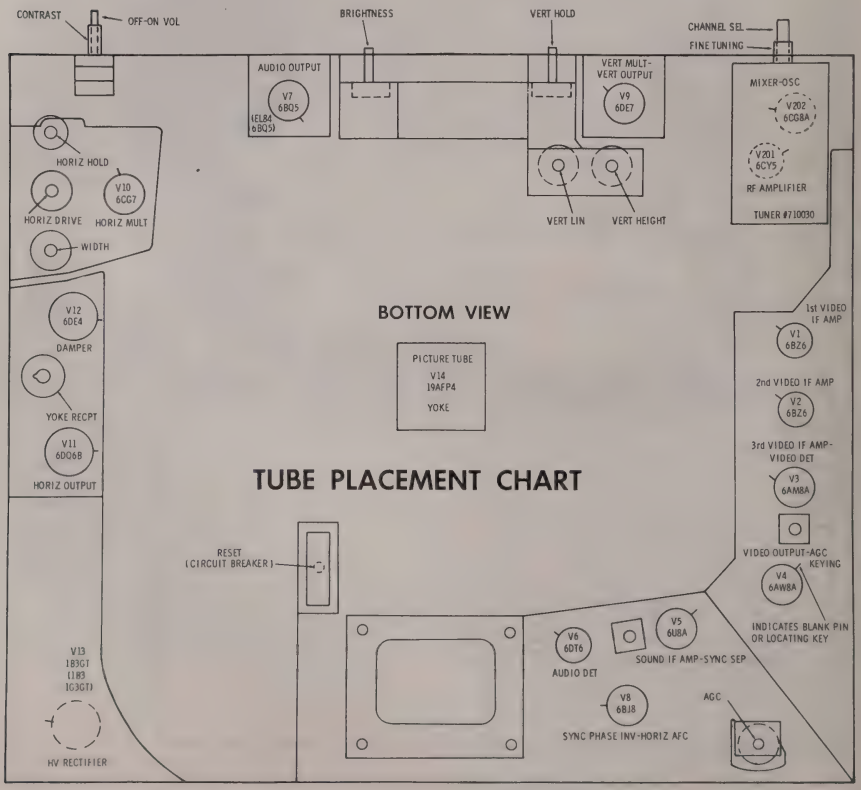
HOFFMAN MODELS K1919, T1919, W1919 (Ch. 355)

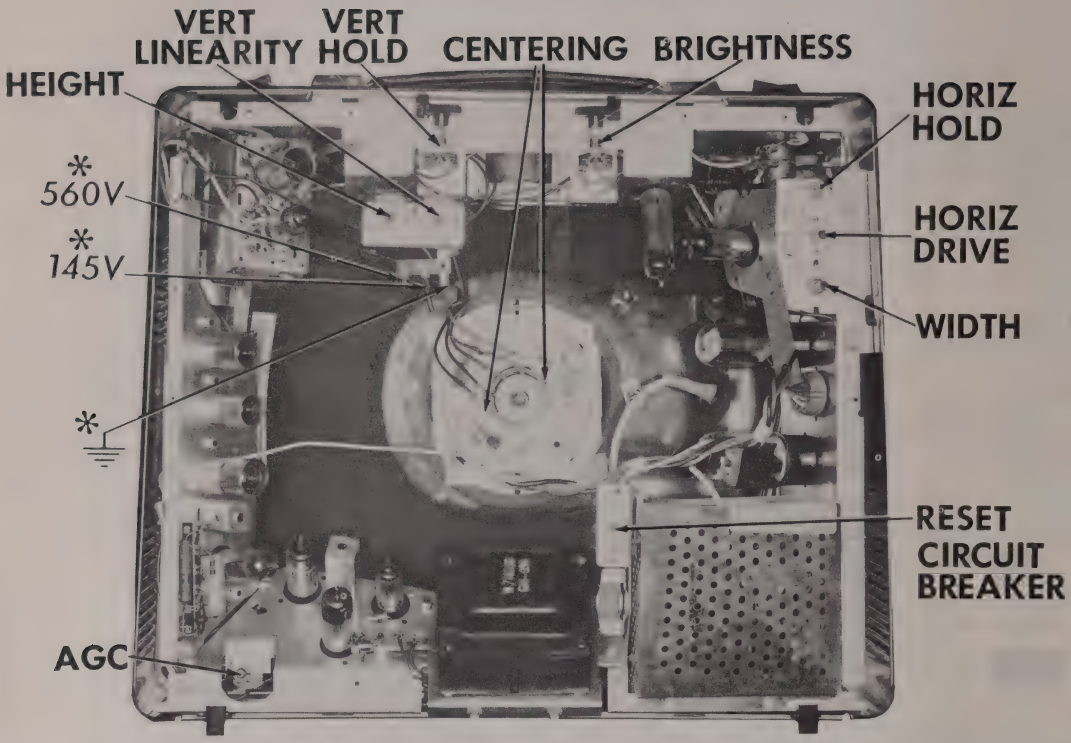
RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BZ6	• 80K	56Ω	.1Ω	0Ω	† 10K	† 10K	0Ω		
V2	6BZ6	• 80K	47Ω	.1Ω	0Ω	† 10K	† 10K	0Ω		
V3	6AM8A	150Ω	.1Ω	† 35K	0Ω	.1Ω	† 1100Ω	.3Ω	4700Ω	0Ω
V4	6AW8A	† 120Ω	† 940Ω	• 500K	1meg	1meg	• 60Ω	4700Ω	† 22K	† 5600Ω
V5	6U8A	† 120K	100K	† 25K	0Ω	.1Ω	† 25K	0Ω	0Ω	2.5meg
V6	6DT6	5Ω	820Ω	.1Ω	0Ω	ϕ 870K	† 12K	560K		
V7	6BQ5	NC	820Ω	220Ω	0Ω	.1Ω	NC	† 540Ω	NC	† 2200Ω
V8	6BJ8	15Ω	320K	15Ω	0Ω	.1Ω	320K	† 4500Ω	† 120K	4400Ω
V9	6DE7	† 410Ω	NC	• 1.4meg	0Ω	.1Ω	• ϕ 1.3meg	• 2meg	0Ω	150Ω
V10	6CG7	† 7800Ω	700K	1500Ω	0Ω	.1Ω	† 120K	100K	1500Ω	0Ω
V11	6DQ6B	NC	0Ω	NC	† 12K	1meg	NC	.1Ω	0Ω	TOP CAP ϕ 11Ω
V12	6DE4	NC	NC	800K	NC	† 120Ω	NC	0Ω	.1Ω	
V13	1B3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP † 340Ω
V14	19AFP4	0Ω	22K	ϕ 47K	† 2100Ω	NC	NC	• 280K	.1Ω	
V201	6CY5	600K	0Ω	0Ω	.1Ω	† 4300Ω	† 14K	0Ω		
V202	6CG8A	15K	† 14K	0Ω	.1Ω	0Ω	† 6500Ω	† 50K	0Ω	220K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM OUTPUT OF M1.
ϕ MEASURED FROM PIN 3 OF V12.

NC NO CONNECTION





CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

1. Turn the set on and tune in a TV station, preferably with a test pattern.
2. Set the Brightness and Contrast Controls for a normal picture.
3. Turn the Horizontal Hold clockwise until the picture loses sync. It may be necessary to switch off channel and back again for picture to lose sync.
4. Turn the Horizontal Hold slowly counterclockwise until the picture just falls into sync.
5. Turn to an unused channel. If vertical lines appear near the center of the screen, slowly adjust the Horizontal Drive Control until white lines disappear.
6. If in step 5 the Horizontal Drive was adjusted, tune in a TV station and repeat steps 3 and 4. Check horizontal sync by switching off channel and back again.

DISASSEMBLY INSTRUCTIONS

CABINET REMOVAL

1. Remove 7 metal screws holding rear cover. (Remove antenna leads from top of tuner before removing rear cover completely.)
2. Remove rear cover.
3. Remove 4 push-on type knobs at top of cabinet.
4. Remove 4 screws at bottom of cabinet and 5 at top rear of chassis.
5. Remove cabinet.

PICTURE TUBE REMOVAL

1. Follow steps in "Cabinet Removal".
2. Remove 4 screws at top and 2 at bottom holding chassis to front mask.
3. Loosen 2 screws at bottom of chassis.
4. Remove picture tube socket, yoke plug, and high voltage lead.
5. Remove picture tube.

PHOTOFACT® Folder with CIRCUITRACE®

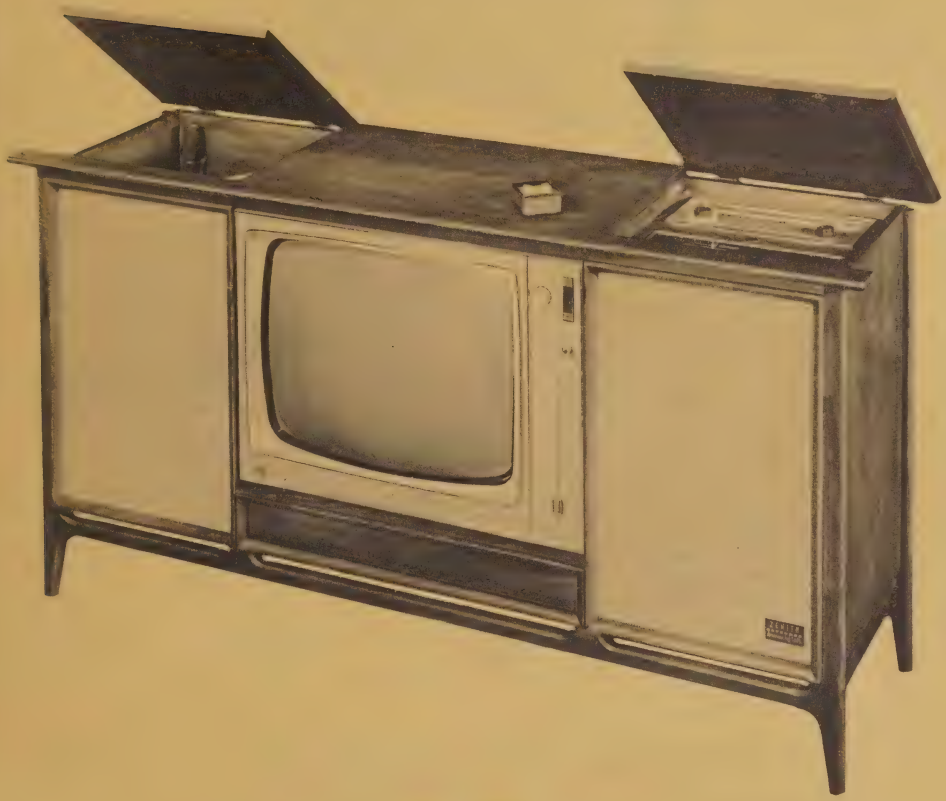
ZENITH CHASSIS 16F21, Q, U, 16E23, Q, U, 16F23, Q, U, 4F20, 5F29, 7F20

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

ZENITH CHASSIS 16F21, Q, U, 16E23, Q, U, 16F23, Q, U, 4F20, 5F29, 7F20



ZENITH CHASSIS 16F21, Q, U, 16E23, Q, U, 16F23, Q, U, 4F20, 5F29, 7F20

MODEL F3388W
(TV CH. 16F23Q, REMOTE CONTROL RECEIVER S-50264, FM-AM TUNER 7F20, AUDIO AMP. 5F29

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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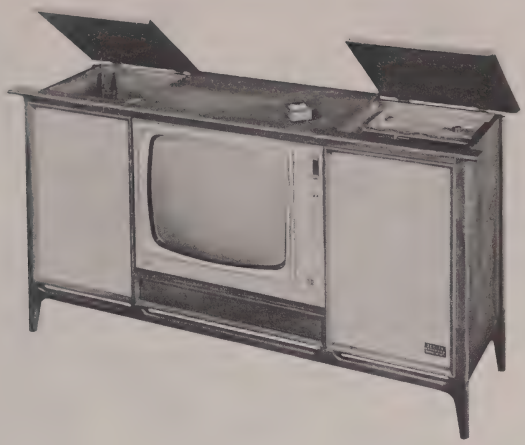
ZENITH CHASSIS 16F21, Q, U, 16E23, Q, U, 16F23, Q, U, 4F20, 5F29, 7F20



MODEL F3388W

TV CH. 16F23Q, REMOTE CONTROL RECEIVER S-50264, FM-AM TUNER 7F20, AUDIO AMP. 5F29

TRADE NAME	ZENITH MODELS	TV Chassis	Remote Control Receiver	FM-AM Tuner	Amp.
	F2301R, RU, Y, YU, F2340E, EU, R, RU, W, WU, F2341E, EU, R, RU, W, WU	16F21, U			
	F3004E, M, R, W	16F21Q	S-48433		
	F2751H, HU, M, MU, R, RU, W, WU	16E23, U			
	F3359M	16E23Q	S-49664		
	F2737E, EU, R, RU, W, WU	16E23, U or 16F23, U			
	F2710Y, YU, F2712E, EU, R, RU, W, WU, F2735E, EU, R, RU, W, WU, F2738E, EU, M, MU, R, RU, W, WU, F2739E, EU, R, RU, W, WU, F2740E, EU, R, RU, W, WU, F2752R, RU, W, WU, Y, YU, F2755H, HU, M, MU, R, RU, W, WU, F2756E, EU, R, RU, W, WU	16F23			
	F2786E, R, W	16F23		7F20	4F20
	F3310E, R, W, F3342E, R, W	16F23Q	S-50153		
	F3311R, W, Y, F3348R, W, F3350E, R, W, F3353W, F3354H, M, R	16F23Q	S-50264		
	F3388W	16F23Q	S-50264	7F20	5F29

MANUFACTURER: Zenith Radio Corp., 6001 Dickens Ave., Chicago 39, Illinois

TYPE SET: Television Receiver (Some Models with Remote Control, FM-AM Tuner, Stereo Audio Amplifier, and 4 Speed Automatic Record Changer)

TUBES: TV: VHF - Sixteen, UHF - Seventeen
FM-AM Tuner: Seven
Audio Amp,: 4F20 - Four
5F29 - Five
Remote Control Receiver: S-48433 - Six
S-50153 - Six
S-50264 - Eight

POWER SUPPLY RATING: 110 - 120 Volts AC, 60 Cycle
TV, Remote Control Receiver S-50264, FM-AM Tuner with Amp. Ch. 5F29:
345 Watts, 3.05 Amp. @ 117 Volts AC (385 Watts, 3.4 Amp. while Tuning w/ Remote)
TV and Remote Control Receiver S-50264:
245 Watts, 2.15 Amp. @ 117 Volts AC (285 Watts, 2.5 Amp. while Tuning w/Remote)
TV: 200 Watts, 1.8 Amp. @ 117 Volts AC
FM-AM Tuner with Amp. 5F29: 100 Watts, .9 Amp. @ 117 Volts AC

TUNING RANGE: TV: Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)
FM-AM Tuner: Broadcast - 540-1600KC IF - 455KC
FM - 88-108MC IF - 10.7MC

FOR SERVICE INFORMATION ON RECORD CHANGER - SEE SIMILAR V-M 1571 - PHOTOFACT SET 527

FOR SERVICING IN THE FIELD INFORMATION - SEE PAGE 39

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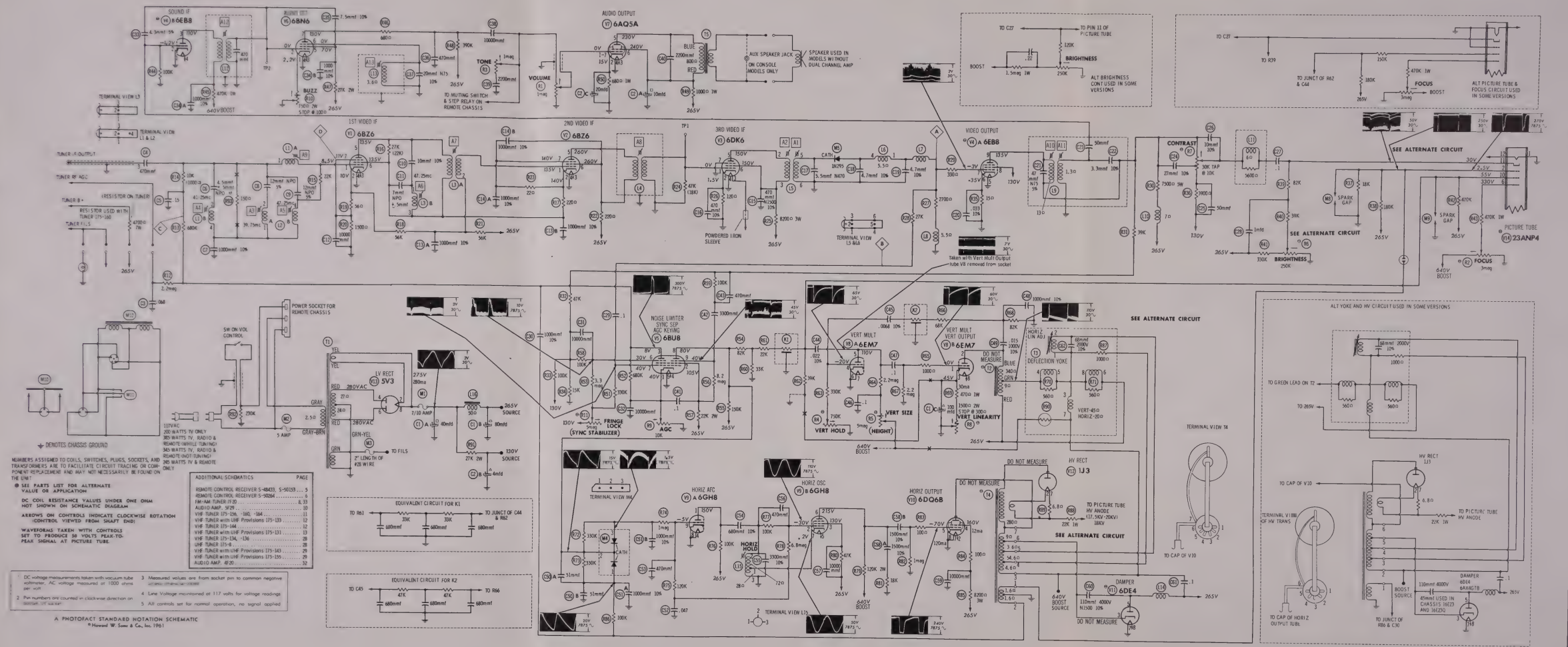
KC544


SOUND IF V6 6EB8
V5 6BN6
AUDIO OUTPUT V7 6AQ5A
TONE
VOLUME
BUZZ
640V BOOST
TO MUTING SWITCH & STEP RELAY ON REMOTE CHASSIS
AUX SPEAKER JACK ON CONSOLE MODELS ONLY
SPEAKER USED IN MODELS WITHOUT DUAL CHANNEL AMP
TERMINAL VIEW L3
TERMINAL VIEW L1 & L2
1ST VIDEO IF V1 6BZ6
2ND VIDEO IF V2 6BZ6
3RD VIDEO IF V3 6DK6
TP1
TP2
TUNER I-F OUTPUT
TUNER RF AGC
TUNER B+
RESISTOR USED WITH TUNER 175-160
TUNER FILS
POWDERED IRON SLEEVE
VIDEO OUTPUT V4 A 6EB8
TERMINAL VIEW L5 &L6
Taken with Vert Mult Output tube V8 removed from socket
TO C27
TO PIN 11 OF PICTURE TUBE
BRIGHTNESS
BOOST
ALT BRIGHTNESS CONT USED IN SOME VERSIONS
TO R39
TO JUNCT OF R62 & C44
FOCUS
ALT PICTURE TUBE & FOCUS CIRCUIT USED IN SOME VERSIONS
CONTRAST
SPARK GAP
SEE ALTERNATE CIRCUIT
PICTURE TUBE V14 23ANP4
BRIGHTNESS
FOCUS
DENOTES CHASSIS GROUND
POWER SOCKET FOR REMOTE CHASSIS
SW ON VOL CONTROL
LV RECT V13 5V3
7/10 AMP
5 AMP
265V SOURCE
130V SOURCE
TO FILS
2' LENGTH OF #28 WIRE
NOISE LIMITER SYNC SEP AGC KEYING V5 6BU8
FRINGE LOCK (SYNC STABILIZER)
AGC
VERT MULT V8 A 6EM7
VERT MULT VERT OUTPUT V8 B 6EM7
VERT HOLD
VERT SIZE (HEIGHT)
VERT LINEARITY
DO NOT MEASURE
HORIZ LIN ADJ
DEFLECTION YOKE
VERT-45Ω HORIZ-20Ω
SEE ALTERNATE CIRCUIT
HORIZ AFC V9 A 6GH8
HORIZ OSC V9 B 6GH8
HORIZ HOLD
HORIZ OUTPUT V10 6DQ6B
HV RECT V12 1J3
TO PICTURE TUBE HV ANODE (17.5KV-20KV) 18KV
DAMPER V11 6DE4
640V BOOST SOURCE
TERMINAL VIEW M4
TERMINAL VIEW L13
TERMINAL VIEW T4
TO CAP OF V10
ALT YOKE AND HV CIRCUIT USED IN SOME VERSIONS
TO GREEN LEAD ON T2
TO 265V
TO CAP OF V10
TO PICTURE TUBE HV ANODE
TERMINAL VIEW OF HV TRANS
TO CAP OF HORIZ OUTPUT TUBE
BOOST SOURCE
TO JUNCT OF R86 & C30
DAMPER 6DE4 6AX4GTB
110mmf 4000V USED IN CHASSIS 16E23 AND 16E230
45mmf USED IN CHASSIS 16E23 AND 16E230
EQUIVALENT CIRCUIT FOR K1
TO R61
TO JUNCT OF C44 & R62
EQUIVALENT CIRCUIT FOR K2
TO C45
TO R66
11?VAC 200 WATTS TV ONLY 285 WATTS TV, RADIO & REMOTE-WHILE TUNING 345 WATTS TV, RADIO & REMOTE-WHILE TUNING 285 WATTS TV & REMOTE ONLY

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 80 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.

ADDITIONAL SCHEMATICS	PAGE
REMOTE CONTROL RECEIVER S-48433, S-50153	5
REMOTE CONTROL RECEIVER S-50264	6
FM-AM TUNER 1F20	8, 33
AUDIO AMP. 5F29	10
VHF TUNER 175-156, -160, -164	11
VHF TUNER with UHF Provisions 175-133	12
VHF TUNER 175-144	12
VHF TUNER with UHF Provisions 175-131	13
VHF TUNER 175-134, -136	28
UHF TUNER 175-6	28
VHF TUNER with UHF Provisions 175-143	29
VHF TUNER with UHF Provisions 175-155	29
AUDIO AMP. 4F20	32

1 DC voltage measurements taken with vacuum tube voltmeter. AC voltage measured at 1000 ohms per volt

2 Pin numbers are counted in clockwise direction on bottom of socket

3 Measured values are from socket pin to common negative unless otherwise noted

4 Line Voltage maintained at 117 volts for voltage readings

5 All controls set for normal operation, no signal applied

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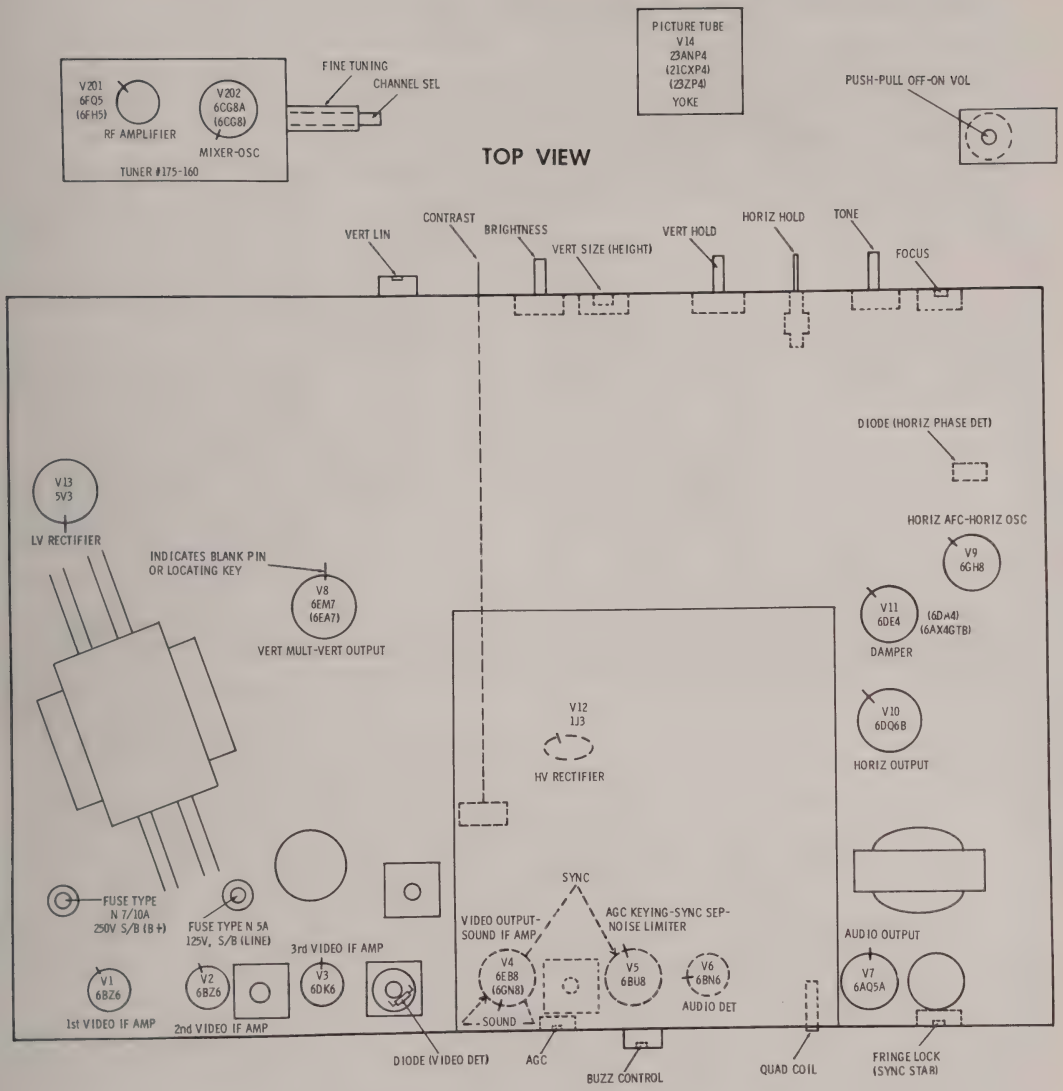
ZENITH CHASSIS 16F21, Q, U, 16E23, Q, U, 16F23, Q, U, 4F20, 5F29, 7F20

TUBE PLACEMENT CHART
TV



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound Fuse (Line), V13, Fuse (B+), Fuse (Fil.)

SWEEP FAILURE
No raster, has sound V9, V10, V11, V12, V14
No vertical deflection V8
Poor vert. linearity or foldover V8
Poor horiz. linearity or foldover V9, V10, V11, V13
Narrow picture V9, V10, V11, V13
Vert. off freq. V8
Horiz. off freq. Diode (Horiz. Phase Det.), V9

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, Diode (Video Det.), V4
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V14
Has pic, no sound V4, V6, V7
Overloaded picture V5

SYNC FAILURE
No vert. sync V5
No horiz. sync V5
No vert. or horiz. sync V5

ALIGNMENT INSTRUCTIONS

TV

PRE-ALIGNMENT INSTRUCTIONS

Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: Al thru Al3 .... GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545

VIDEO IF ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	High side thru 470mmf to TP-1. Low side to chassis. Connect a 56Ω carbon resistor across sweep output.	44MC (10MC Swp.)	39.75MC 41.25MC 45.75MC	Between any two channels	Vert. Amp. thru 10K to point (A). Low side to chassis. (Across Video Det. load.)	A1, A2	Set sweep generator output to produce 3 volts peak to peak on scope. Adjust A1 and A2 alternately for maximum gain and symmetry with the 45.75MC marker positioned as shown in Fig. 1. The 39.75MC marker can fall within ±.5MC of the specified frequency. If the desired response cannot be obtained, check to see that the cores are entering their respective windings from opposite ends of the coils.
2.	High side to ungrounded tube shield floating over Mixer-Osc. Low side to chassis.	"	39.75MC 41.25MC 47.25MC	"	"	A3, A4, A5, A6	Connect a clip lead from point (B) to chassis. Connect a clip lead from point (C) to point (D). Use high scope gain and adjust A3 thru A6 for MINIMUM marker amplitudes as in Fig.2. A3 controls 39.75MC marker, A4 controls 41.25MC marker, and A5 and A6 control the 47.25MC marker.
3.	"	"	41.25MC 42.75MC 45.0MC 45.75MC	"	"	A7, A8, A9 and Mixer Plate Coil	Remove clip lead from point (D) and connect to chassis. Adjust for maximum gain and symmetry of response similar to Fig. 3 with markers as shown. A7 affects low side of curve and A8 affects the high side. Remove clip leads.

SOUND IF ALIGNMENT

Connect an adjustable attenuator between the antenna and the receiver antenna terminals. Tune in a TV station and adjust the attenuator until the signal is below the limiting level of the Audio Detector as evidenced by a hiss similar to super-regeneration in the sound. Adjust Al0, All, Al2, and Al3 for maximum sound of best quality. Adjust the Buzz Control for MINIMUM buzz.
If the hiss disappears during alignment, further reduce the signal level until the hiss returns.

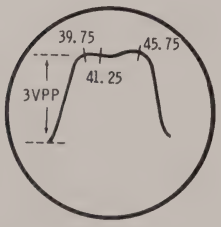


FIG. 1

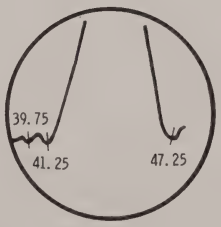


FIG. 2

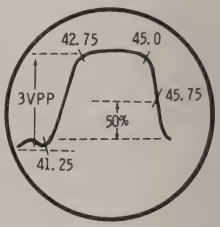
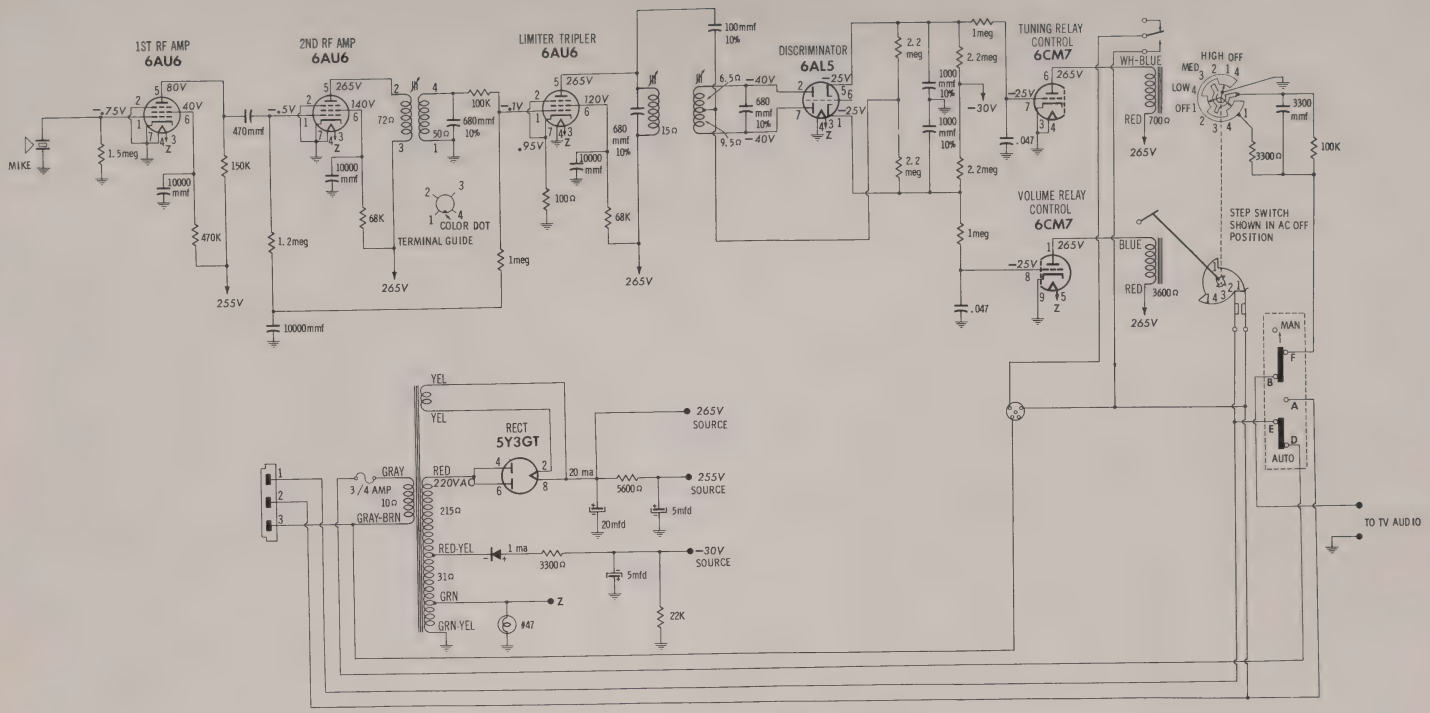


FIG. 3

ALIGNMENT IDENTIFICATION PHOTO - PAGE 39



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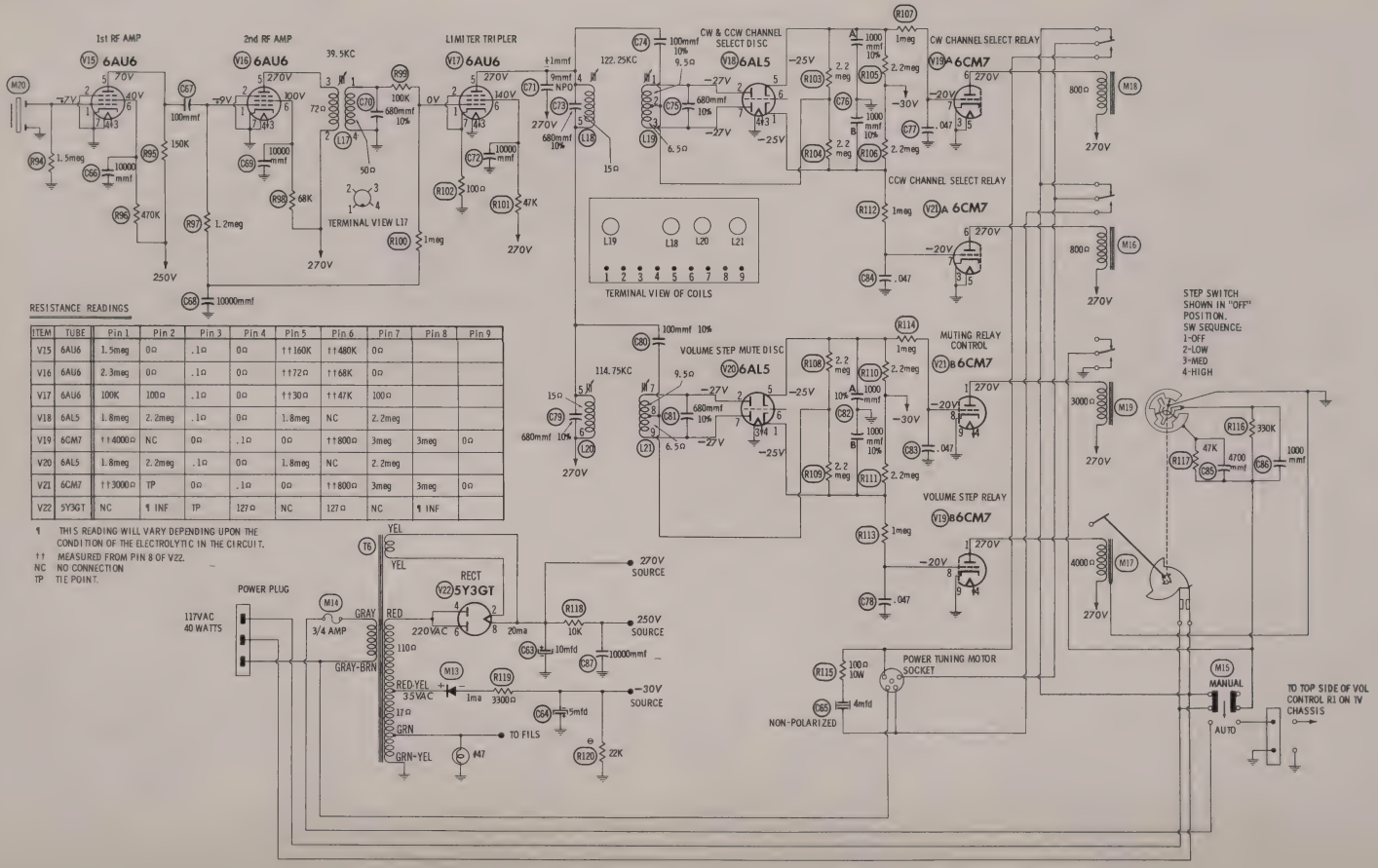
REMOTE CONTROL RECEIVER S-48433, S-50153

ZENITH CHASSIS 16F21, Q, U, 16E23, Q, U, 16F23, Q, U, 4F20, 5F29, 7F20



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V15	6AU6	1.5meg	0Ω	.1Ω	0Ω	††160K	††480K	0Ω		
V16	6AU6	2.3meg	0Ω	.1Ω	0Ω	††72Ω	††68K	0Ω		
V17	6AU6	100K	100Ω	.1Ω	0Ω	††30Ω	††47K	100Ω		
V18	6AL5	1.8meg	2.2meg	.1Ω	0Ω	1.8meg	NC	2.2meg		
V19	6CM7	††4000Ω	NC	0Ω	.1Ω	0Ω	††800Ω	3meg	3meg	0Ω
V20	6AL5	1.8meg	2.2meg	.1Ω	0Ω	1.8meg	NC	2.2meg		
V21	6CM7	††3000Ω	TP	0Ω	.1Ω	0Ω	††800Ω	3meg	3meg	0Ω
V22	5Y3GT	NC	¶ INF	TP	127Ω	NC	127Ω	NC	¶ INF	

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
†† MEASURED FROM PIN 8 OF V22.
NC NO CONNECTION
TP TIE POINT.

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REMOTE CONTROL RECEIVER S-50264

AM-FM TUNER ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use only enough generator output to provide a usable indication.
Use only enough sweep generator output to provide a usable pattern on scope.
Suggested Alignment Tools: A14 thru A18, A20, A22 thu A28 .. GENERAL CEMENT #8282, 8606, 8606L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545
A19, A21 ..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

AM ALIGNMENT - SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .05mfd to pin 2 (grid) of AM Mixer. Low side to chassis.	455KC (400∿ Mod.)	(AM) Tuning gang fully open.	Across voice coil	A14, A15, A16, A17, A18	Adjust for maximum output.
2.	Loop	1600KC	1600KC	"	A19	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	600KC	600KC	"	A20	"
4.	"	1400KC	Tune to 1400KC Signal	"	A21	Adjust for maximum output. Steps 2, 3 and 4.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM - SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
5.	High side thru .05mfd to pin 1 (grid) of FM Limiter. Low side to chassis.	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe thru 1meg to point Ⓐ. Common to chassis.	A22	Adjust for maximum deflection.
6.	"	"	"	DC probe to point Ⓑ. Common to chassis.	A23	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
7.	High side thru .05mfd to pin 2 (grid) of FM Mixer. Low side to chassis.	"	"	DC probe to pin 1 (grid) of FM Limiter. Low side to chassis.	A24, A25, A26, A27, A28	Adjust for maximum deflection.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE - SELECTOR IN FM POSITION

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
5.	High side thru .05mfd to pin 1 (grid) of FM Limiter. Low side to chassis.	10.7MC (450KC Swp.)	(FM) Point of non-interference.	Vert. Amp. thru 27K to point Ⓐ. Low side to chassis.	A22	Adjust for maximum gain and symmetry of response similar to Fig. 1.
6.	"	"	"	Vert. Amp. to point Ⓑ. Low side to chassis.	A23	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A9 for maximum amplitude and straightness of crossover lines.
7.	High side thru .05mfd to pin 2 (grid) of FM Mixer. Low side to chassis.	"	"	Vert. Amp. to pin 1 (grid) of FM Limiter. Low side to chassis.	A24, A25 A26, A27 A28	Adjust for maximum gain and symmetry of response similar to Fig. 1.

FM RF ALIGNMENT - SELECTOR IN FM POSITION

Remove line antenna.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
8.	Across FM antenna terminals with 120Ω in each lead.	98MC	(FM) 98MC	DC probe to pin 1 (grid) of FM Limiter. Common to chassis.	A29, A30	Adjust for maximum deflection.

FIG. 1

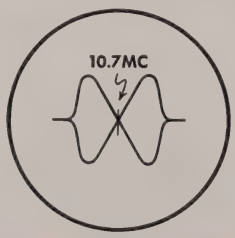
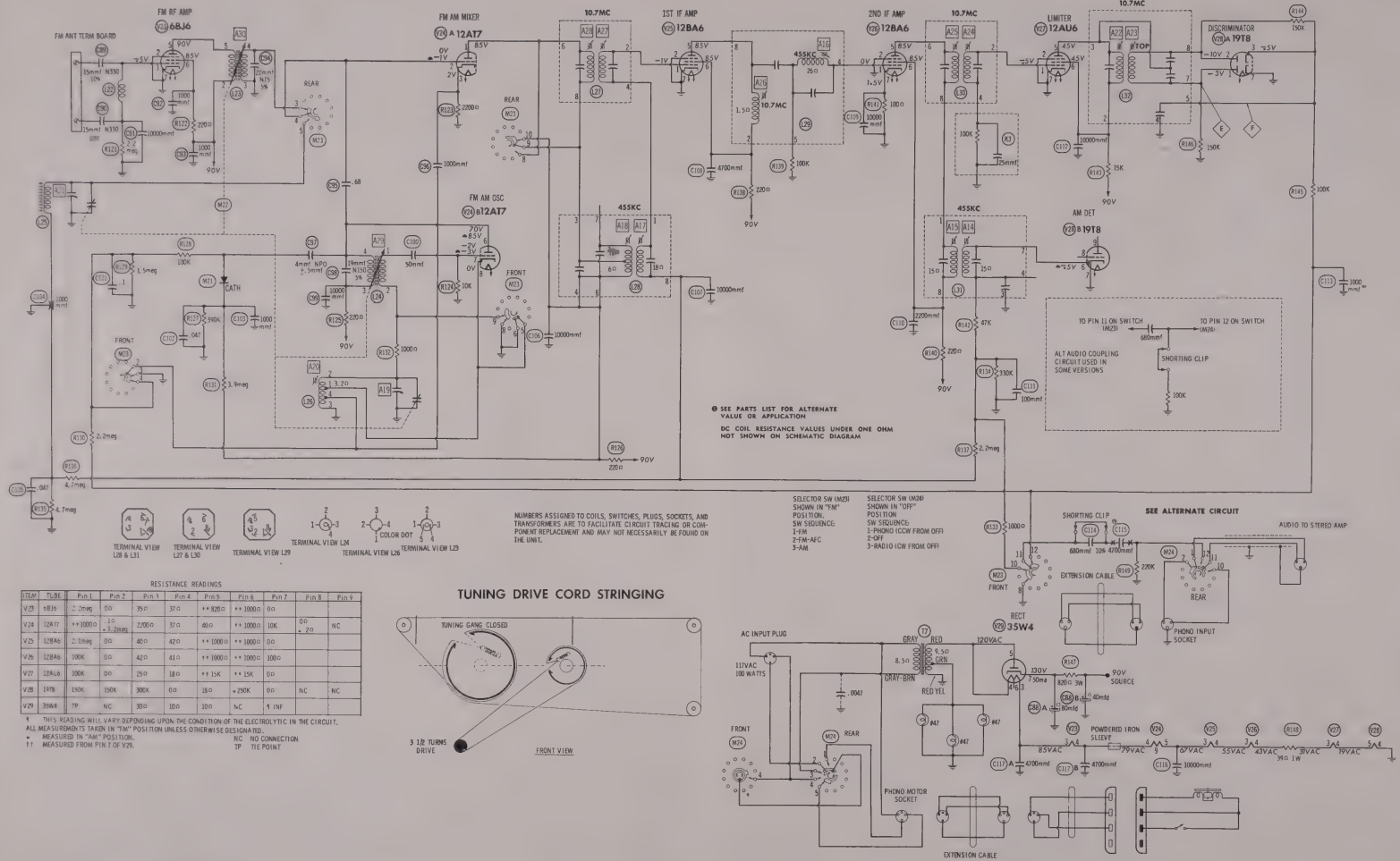


FIG. 2



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V23	6BJ6	2.2meg	0Ω	35Ω	37Ω	††820Ω	††1000Ω	0Ω		
V24	12AT7	††1000Ω	10 ± 3.2meg	2,200Ω	37Ω	46Ω	††1000Ω	10K	0Ω ± 2Ω	NC
V25	12BA6	2.2meg	0Ω	40Ω	42Ω	††1000Ω	††1000Ω	0Ω		
V26	12BA6	100K	0Ω	42Ω	41Ω	††1000Ω	††1000Ω	100Ω		
V27	12AU6	100K	0Ω	25Ω	18Ω	††15K	††15K	0Ω		
V28	19T8	150K	150K	300K	0Ω	18Ω	±250K	0Ω	NC	NC
V29	35W4	TP	NC	30Ω	10Ω	10Ω	NC	¶ INF		

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
± MEASURED IN "AM" POSITION.
†† MEASURED FROM PIN 7 OF V29.
NC NO CONNECTION
TP TIE POINT

TUNING DRIVE CORD STRINGING

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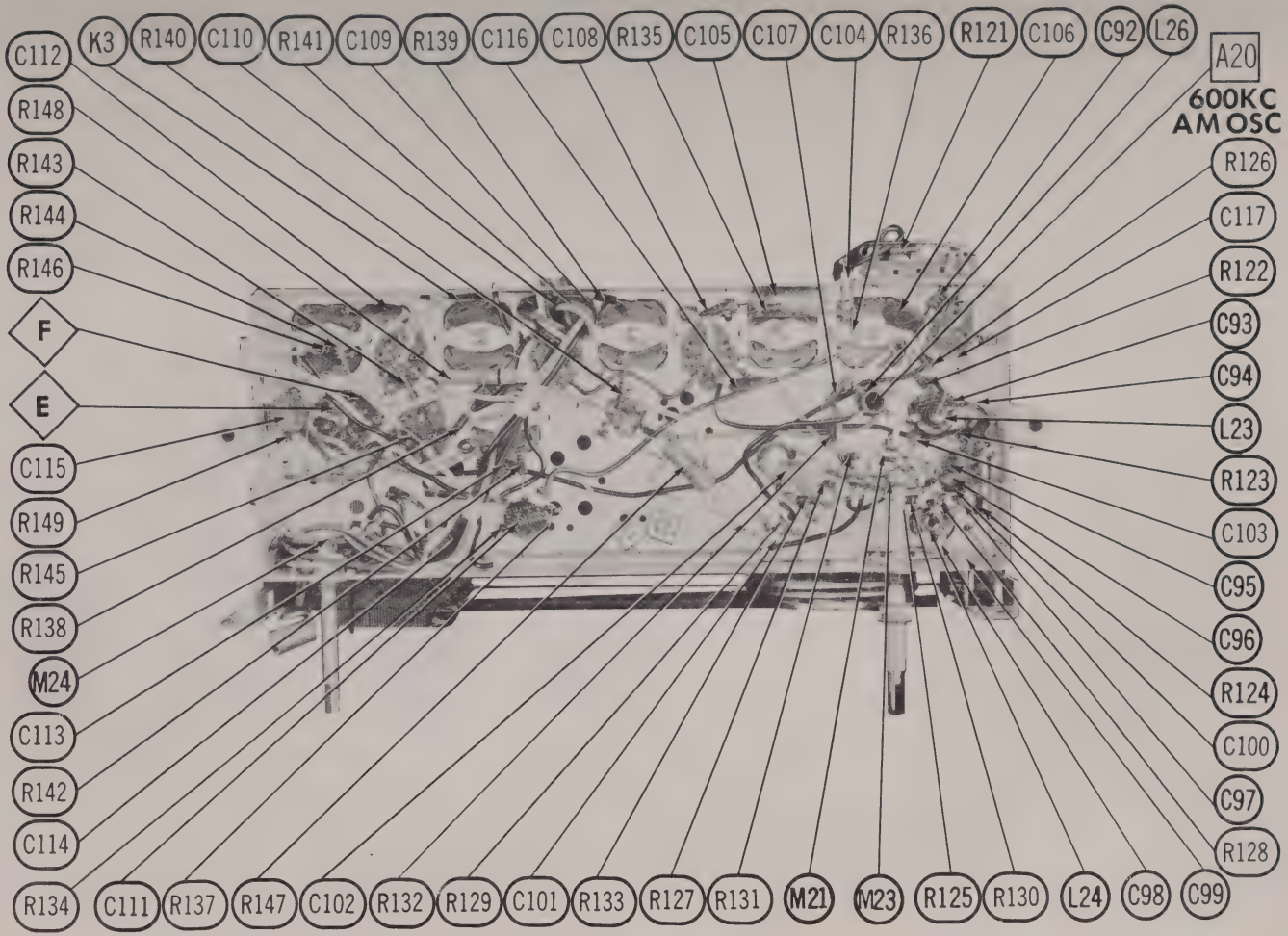
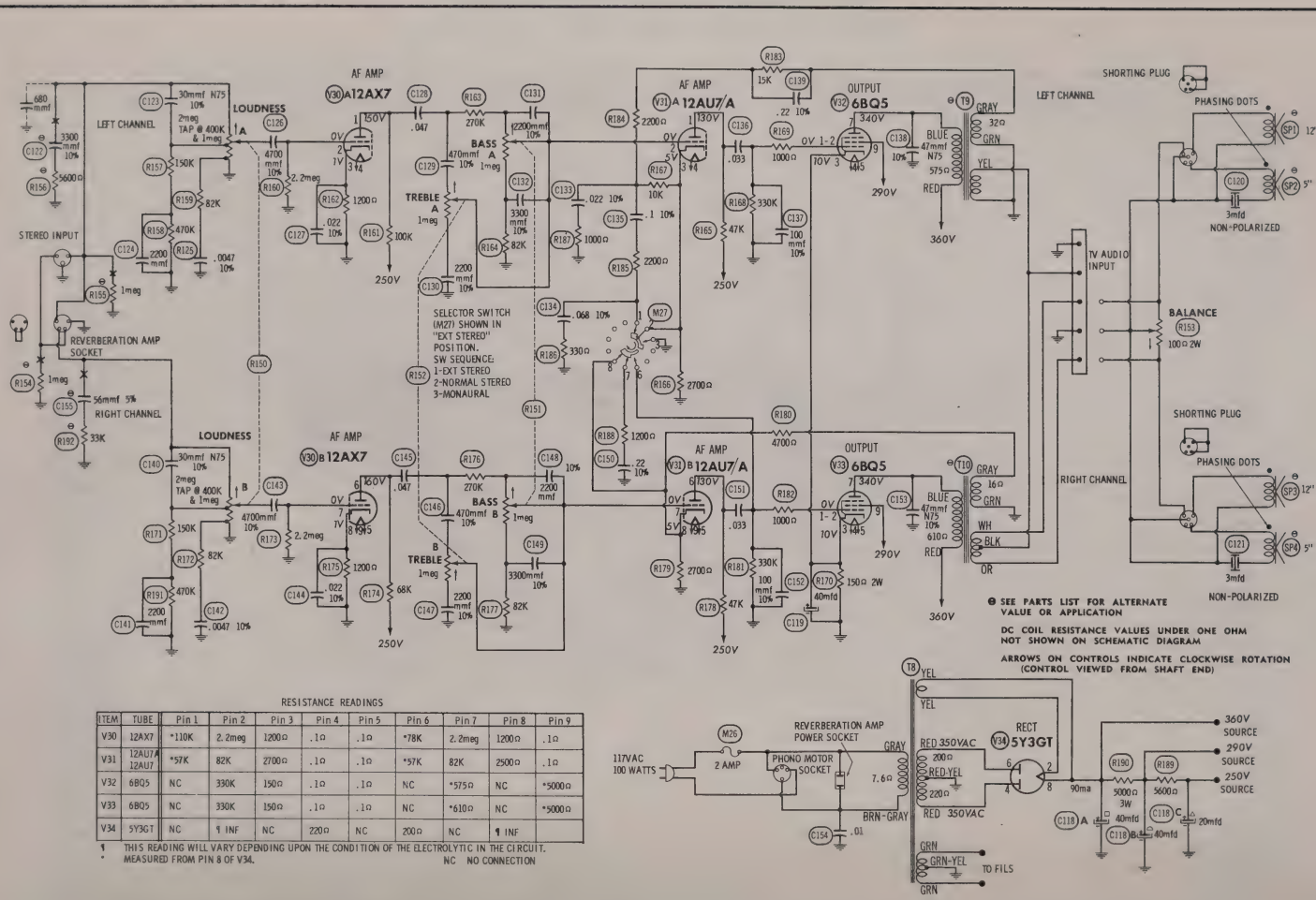
FM-AM TUNER 7F20



FM-AM TUNER 7F20 - BOTTOM VIEW

ZENITH CHASSIS 16F21, Q, U, 16E23,
Q, U, 16F23, Q, U, 4F20, 5F29, 7F20



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V30	12AX7	*110K	2.2meg	1200Ω	.1Ω	.1Ω	*78K	2.2meg	1200Ω	.1Ω
V31	12AU7/A 12AU7	*57K	82K	2700Ω	.1Ω	.1Ω	*57K	82K	2500Ω	.1Ω
V32	6BQ5	NC	330K	150Ω	.1Ω	.1Ω	NC	*575Ω	NC	*5000Ω
V33	6BQ5	NC	330K	150Ω	.1Ω	.1Ω	NC	*610Ω	NC	*5000Ω
V34	5Y3GT	NC	¶ INF	NC	220Ω	NC	200Ω	NC	¶ INF	

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
* MEASURED FROM PIN 8 OF V34. NC NO CONNECTION

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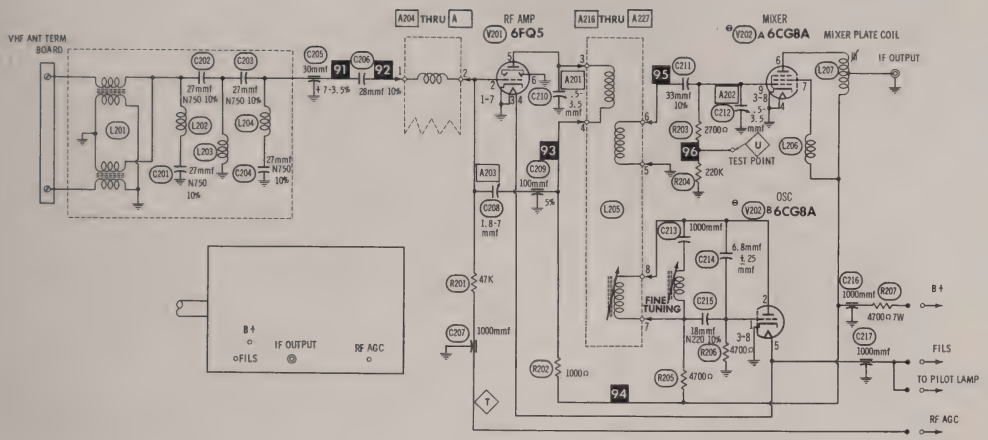
AUDIO AMP. 5F29



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with CIRCUITRACE

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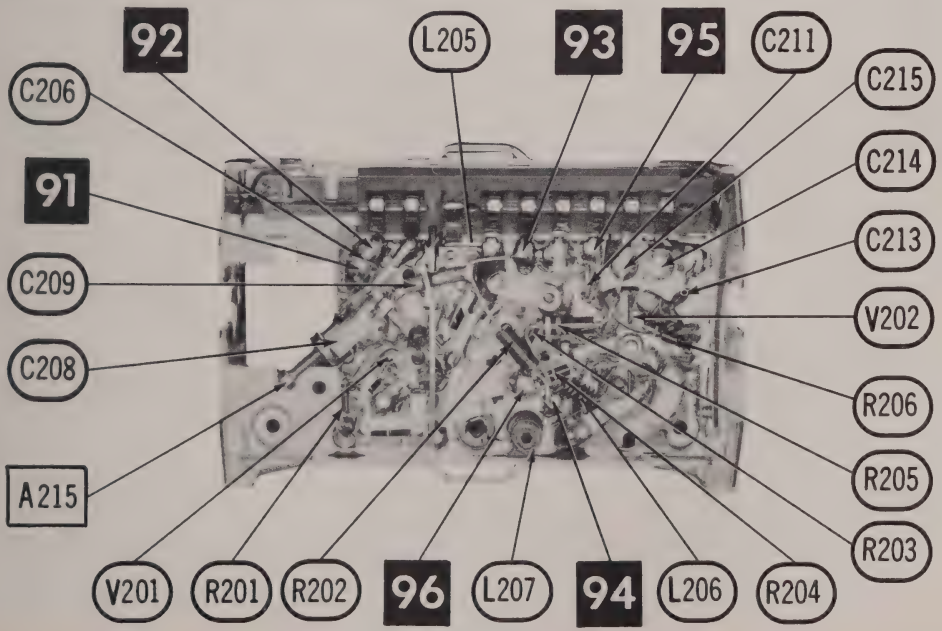
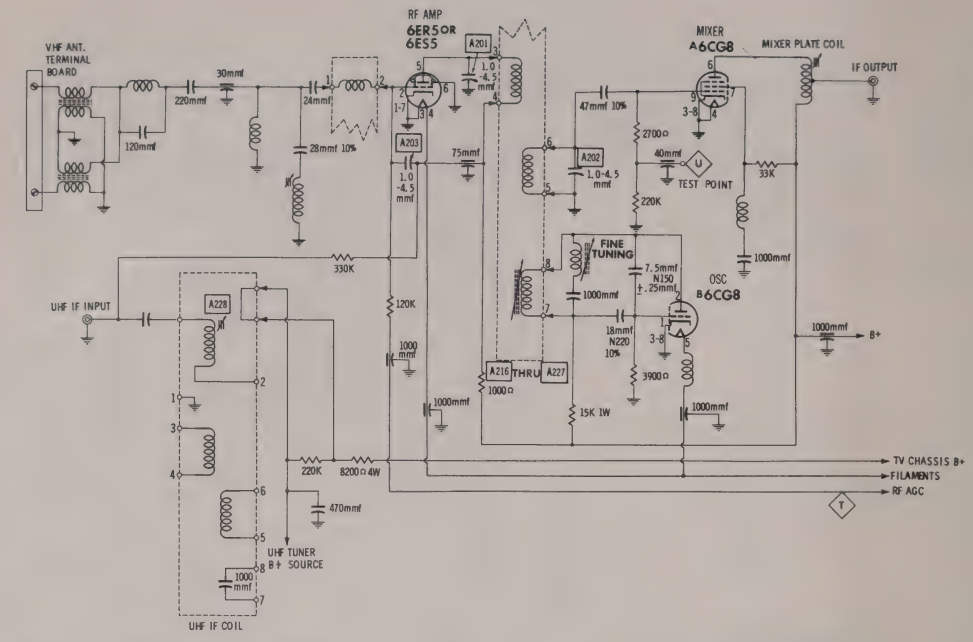
VHF TUNER 175-156, -160, -164



A Howard W. Sams CIRCUITRACE Photo

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

VHF TUNER 175-160 - BOTTOM VIEW



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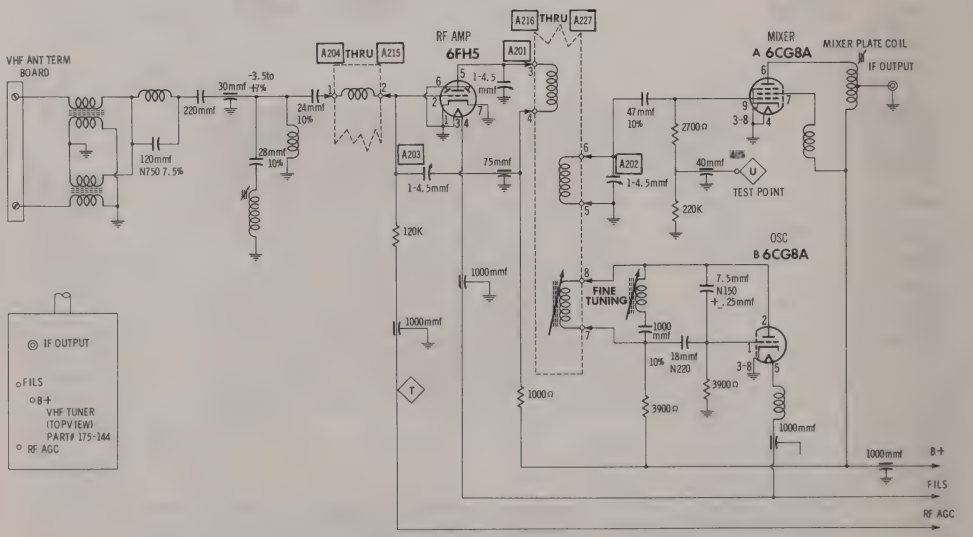
VHF TUNER with UHF Provisions - 175-133



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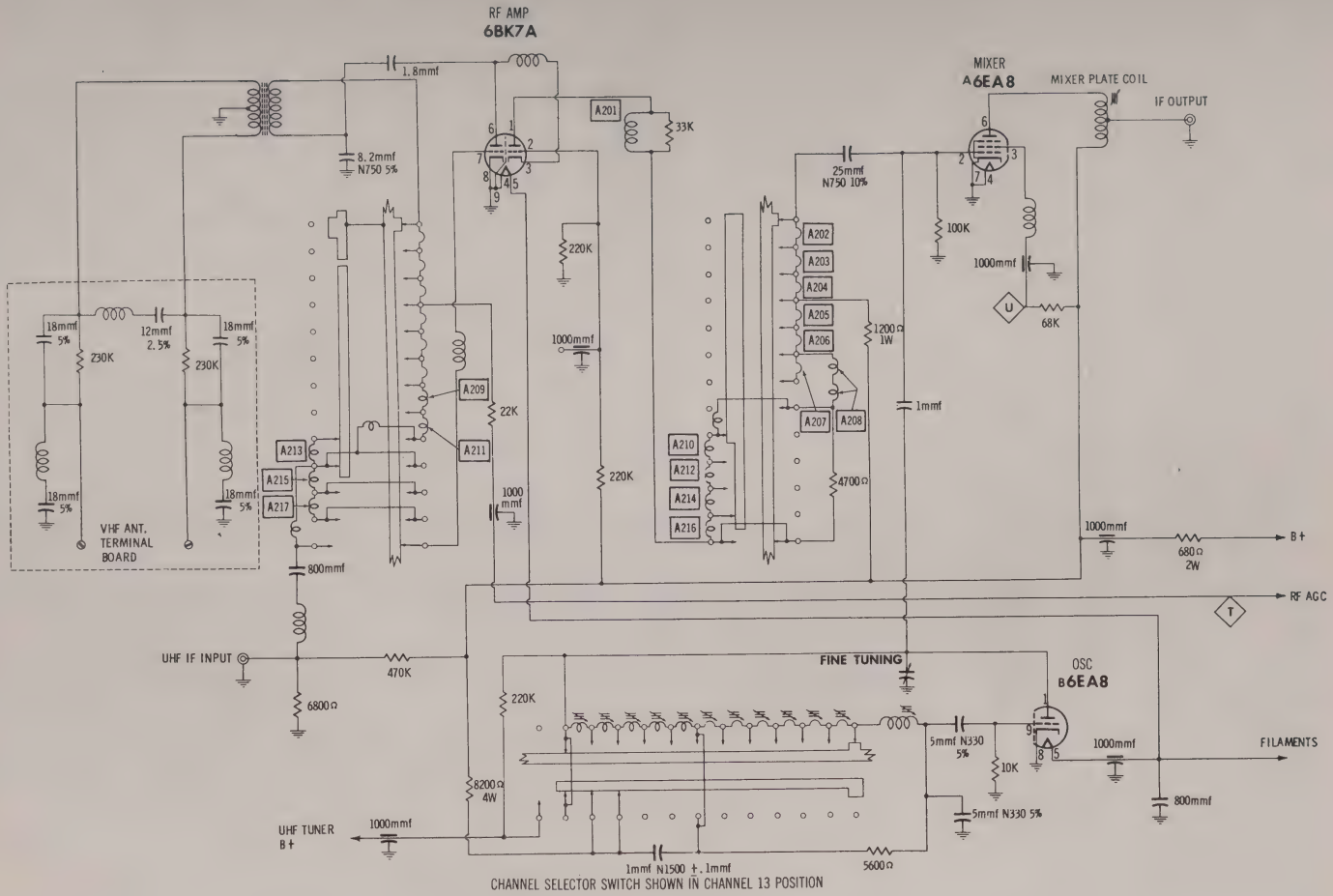
VHF TUNER 175-144



CHANNEL SELECTOR SWITCH SHOWN IN CHANNEL 13 POSITION

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VHF TUNER with UHF Provisions 175-131

ZENITH CHASSIS 16F21, Q, U, 16E23, Q, U, 16F23, Q, U, 4F20, 5F29, 7F20

VHF TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS FOR TUNER 175-131

Allow a 20 minute warm-up period for the receiver and test equipment.

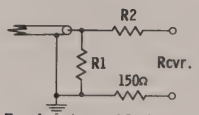
VHF OSCILLATOR ALIGNMENT

Set the Fine Tuning to the center of its range by turning the Fine Tuning shaft until the small index hole in the drive cam is directly over the small hole just below the channel 13 oscillator adjustment screw. Starting with the highest channel operating in the area, adjust the appropriate oscillator adjustment screw for best picture and sound for each channel available.

VHF RF AND MIXER ALIGNMENT

Connect the negative lead of a 2 volt bias supply to point (T). Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usuable pattern on scope.
Use 10MC sweep unless otherwise noted.
Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Fig. 201	Across antenna terminals thru matching network (Fig. 201).	213MC	211.25MC 215.75MC	13	Vert. amp. thru 10K to point (T). Low side to chassis.	A201	Adjust for maximum gain and symmetry of response similar to Fig. 202 with markers as shown.
2.	"	"	207MC	205.25MC 209.75MC	12	"	A202	"
3.	"	"	201MC	199.25MC 203.75MC	11	"	A203	"
4.	"	"	195MC	193.25MC 197.75MC	10	"	A204	"
5.	"	"	189MC	187.25MC 191.75MC	9	"	A205	"
6.	"	"	183MC	181.25MC 185.75MC	8	"	A206	"
7.	"	"	177MC	175.25MC 179.75MC	7	"	A207	"
8.	"	"	85MC	83.25MC 87.75MC	6	"	A208, A209	Adjust for maximum gain and symmetry of response similar to Fig. 202 with markers as shown. Adjust first coil for proper marker position and second coil for maximum gain and symmetry.
9.	"	"	79MC	77.25MC 81.75MC	5	"	A210, A211	"
10.	"	"	69MC	67.25MC 71.75MC	4	"	A212, A213	"
11.	"	"	63MC	61.25MC 65.75MC	3	"	A214, A215	"
12.	"	"	57MC	55.25MC 59.75MC	2	"	A216, A217	"



Zo = Impedance of Cable

Zo	R1	R2
50Ω	56Ω	120Ω
75Ω	82Ω	110Ω

FIG. 201

FIG. 202

TV PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE
V1	1st Video IF Amp.	6BZ6
V2	2nd Video IF Amp.	6BZ6
V3	3rd Video IF Amp.	6DK6
V4	Video Output - Sound IF Amp.	6EB8 (6GN8) *
V5	AGC Keying - Sync Sep. - Noise Limiter	6BU8
V6	Audio Detector	6BN6

ITEM No.	USE	TYPE
V7	Audio Output	6AQ5A
V8	Vert. Mult. - Vert. Output	6EM7 (6EA7) *
V9	Horiz. AFC - Horiz. Osc.	6GH8
V10	Horiz. Output	6DQ6B
V11	Damper	6DE4 (6DA4) * (6AX4GTB) *
V12	HV Rectifier	1J3
V13	LV Rectifier	5V3

* Alternate

PICTURE TUBE

ITEM No.	REPLACEMENT DATA					NOTES
	ZENITH PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
V14	23ANP4 † 21CXP4 * 23ZP4 ▲	21CXP4 ①	21CXP4 ①	21CXP4 ①	23ANP4 ② 21CXP4 ② 23XP4 ②	① Aluminized ② Silver Screen "85"

† Used in 16F23 Chassis. * Used in 16F21 Chassis. ▲ Used in 16E23 Chassis.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	ZENITH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	■40	400	22-3137	AFHS4-57-93	C0890	FP333.2	TMT-3480	TVL-4663.4	
B	▬80	400							
C	▲100	50							
C2A	■10	400	22-2744	AFH3-180	C1445	FP368.68	TMT-3459	TVL-3655	
B	▲4	350							
C	20	25							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REMARKS	REPLACEMENT DATA						
					AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.	
C3	.068	200V			P288N-068		CUB4S68	4DP-3-683	GEM-4168	4TM-S68	
C4	470				BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47	
C5	.15	200V			P288N-15		CUB2P15	2DP-3-154	GEM-2015	2TM-P15	
C6	4.5	NPO	±.5mmf		NPO-DI 4.7	DTZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47	
C7	1000		10%		DI-1000	DD-102	5R5DI	CCD-102	GP210	10TS-D10	
C8	12	NPO	5%			TCZ-12	C10QJ2C	CCTO-120	CNO-412	10TCC-Q12	
C9	12	NPO	5%			TCZ-12	C10QJ2C	CCTO-120	CNO-412	10TCC-Q12	
C10	10		10%		NPO-SI 10	TCZ-10	C10QJC	CCTO-100	CNO-410	10TCC-Q10	
C11	7	NPO	±.5mmf		NPO-DI 6.8	DTZ-6R8	C10V7C	CCTO-6R8	CNO-568	10TCC-V68	
C12	10000				BPD-01	DD-103	BYA10SI	CCD-103	B-110	5HK-S10	
C13A	1000		10%		DI-1000	DD-102	PM6DI	CCD-102	GP210	10TS-D10	
B	1000		10%		DI-1000	DD-102	PM6DI	CCD-102	GP210	10TS-D10	
C14A	1000		10%		DI-1000	DD-102	PM6DI	CCD-102	GP210	10TS-D10	
B	1000		10%		DI-1000	DD-102	PM6DI	CCD-102	GP210	10TS-D10	
C15	470	N1500	10%	#22-3304				*			
C16	470		10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47	
C17	5.5	N470		#22-3221				*			
C18	4.7		10%		NPO-SI 4.7	TCZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47	
C19	4.7		10%		NPO-SI 4.7	TCZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47	
C20	.033	200V	10%		V84C2S33-10%		PM6S33	4DP-2-333	GEM-1613	6TM-S33	
C21	47	N75	5%	#22-2476				*			
C22	3.3		10%		NPO-SI 3.3	TCZ-3R3	C10V33C	CCTO-3R3	CNO-533	10TCC-V33	
C23	50				SI 50	D6-500	L10Q50	CCD-500	GP450	10TS-Q50	
C24	27		10%		NPO-SI 27	D6-270	L10Q27	CCD-270	GP427	10TS-Q27	
C25	50				SI 50	D6-500	L10Q50	CCD-500	GP450	10TS-Q50	
C26	10		10%		DI-10	D6-100	L10QJ	CCD-100	GP410	10TS-Q10	
C27	.1	400V			P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10	
C28	1mfd	400V			P488N-1.0		PM4W1		GEM-41	4TM-M1	
C29	.1	400V			P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10	
C30	1000		10%		DI-1000	DD-102	5R5DI	CCD-102	GP210	10TS-D10	
C31	10000				BPD-01	DD-103	BYA10SI	CCD-103	B-110	5HK-S10	
C32	10000				BPD-01	DD-103	BYA10SI	CCD-103	B-110	5HK-S10	
C33	4.3		5%		NPO-SI 4.7	TCZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47	
C34A	1000		10%		DI-1000	DD-102	5R5DI	CCD-102	GP210	10TS-D10	
B	1000		10%		DI-1000	DD-102	5R5DI	CCD-102	GP210	10TS-D10	
C35	7.5		10%				L10V8			10TCC-V82	
C36	470				BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47	
C37	20	N75	10%	#22-3139				*			
C38	10000				BPD-01	DD-103	BYA10SI	CCD-103	B-110	5HK-S10	
C39	2200				BPD-0022	DD-222	BYA10D22	CCD-222	B-222	5HK-D22	
C40	2200				BPD-0022	DD-222	BYA10D22	CCD-222	B-222	5HK-D22	
C41	.1	400V			P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10	
C42	3300				BPD-0033	DD-332	BYA10D33	CCD-332	B-233	5HK-D33	
C43	470				BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47	
C44	.022	400V	10%		V84C4S22-10%		PM4S22	4DP-2-223	GEM-1612	4TM-S22	
C45	.0068	200V	10%		V84C2D68-10%		PM6D68	6DP-1-682	GEM-16268	6TM-D68	
C46	.1	600V			P668N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P10	
C47	.1	400V			P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10	
C48	1000		10%		DI-1000	DD-102	PM6DI	CCD-102	GP210	10TS-D10	
C49	.015	1000V	10%		P1084CM-018		DPMSI6SI5	16DP-4-153		MB-S15	

TV PARTS LIST AND DESCRIPTIONS (Continued)

FIXED CAPACITORS (cont)

ITEM No.	RATING		REMARKS	REPLACEMENT DATA					
				AEROVOX PART No.	CENTRALAB PART No.	CORNELL DUBILIER PART No.	EMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C50A	51			DI-50	DD-510	CDD-501	CCD-500	GP450	10TS-Q50
B	51			DI-50	DD-510	CDD-501	CCD-500	GP450	10TS-P50
C51A	1000	10%		DI-1000	DD-102	FM8DI	CCD-102	GP2I0	10TS-D10
B	1000	10%		DI-1000	DD-102	FM8DI	CCD-102	GP2I0	10TS-D10
C52	.047	200V		PJ88N-047	DD-503	CUB3D47	41P-3-473	GEM-4147	2TM-P47
C53	.470			BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C54	680	10%		1469-00068	DD-681	5RS7S9	CM-19B-681K	MCJ349	M5-388
C55	3300	10%		1464-0033		1RSD33	CM-20D-332K	MCJ462	M5-333
C56	.470			BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C57	10000			BPD-01	DD-103	BYA10S	CCD-103	B-110	5HK-S10
C58A	1500	10%		DI-1500	DD-152	5RSD15	CCD-152	GP2I5	10TS-D15
B	1500	10%		DI-1500	DD-152	5RSD15	CCD-152	GP2I5	10TS-D15
C59	10000			BPD-01	DD-103	BYA10S	CCD-103	B-110	5HK-S10
C60	UD -4000V N1500	10%	#22-2694						
C61	.1	600V		PJ68N-1	DF-104	CUB5P1	6DP-4-104	GEM-601	6TM-P10
C62	68	2000V	10%			HVA20G68		2DT-468	

Zenith Part Number.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING			REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE		WATTS	ZENITH PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	1meg		½	63-4681	APL-497	C478-1meg-S	B11-137 *	PP61L	Volume
B	Shaft				AK-53	82-3/16	Not Req.	DS-37	
C	Switch				Not Req.	Not Req.	SK3 *	Not Req.	Push-Pull Off-On
R3	3meg		½	63-4455 ①	TT-84	B47-3meg-S	ELC3	BU-59	Focus
R3A	1meg		½	63-4488 ②	B-70	A47-1meg-Z	QU-137	U53	Tone
B	Shaft				Not Req.	K38-3	Not Req.	Not Req.	
R4A	750K		½	63-4486 ③	B-66	A47-750K-S	QU-136	U54	Vert. Hold
B	Shaft				Not Req.	K38-3	Not Req.	Not Req.	
R5	5meg		½	63-4660 ④	TT-87	B47-5meg-S	ELC5	PTA56L	Vert. Size (Height)
R6A	250K		½	63-4487 ⑤	B-61	A47-250K-Z	QU-135	U44	Brightness
B	Shaft				Not Req.	K38-3	Not Req.	Not Req.	
R7	30K		½	63-4489 ⑥					Contrast
	10K Tap								
R8	1500Ω		2(WW)	63-4620 ⑦	WN-152 **	39-1500 **	U13-1500 **	FL-1.5K **	Vert. Linearity
	300Ω Stop								
R9A	10K		½	63-4095 ③	TT-14	B47-10K-S	BU-118	TA14L	AGC
B	Shaft				Not Req.	Not Req.	TM4	Not Req.	
R10	750Ω		2(WW)	63-3284	WN-751	39-800	U13-650	FL-750	Buzz Control
	100Ω Stop				†	†	†	†	
R11A	5meg		½	63-4012 ⑧		B47-5meg-Z	BU-141	TM5	Fringe Lock (Sync Stab.)
B	Shaft					Not Req.	Not Req.		

① May not be used in Chassis 16E23, Q.
② Chassis 16E23, Q may use Part #63-4679.
③ Chassis 16E23, Q may use Part #63-3262 or #63-4677.
④ Chassis 16E23, Q may use Part #63-4647.
* Factory assembled Part #PPQ1-137 (SSD).
⑤ Chassis 16E23, Q may use Part #63-4049 or #63-4676.
⑥ Chassis 16E23, Q may use Part #63-4076.
⑦ Chassis 16E23, Q may use Part #63-4446.
⑧ Chassis 16E23, Q may use #63-4050.
** Use 270Ω Series Resistor. † Use 100Ω Series Resistor.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R1	2.2meg				R53	3.3meg			
R2	680K				R54	82K			
R3	10K				R55	150K			
R4	22K			(1000Ω) *	R56	6.2meg			
R5	27K			(22K) *	R57	22K 2W			
R6	220Ω				R58	100K			
R7	56K				R59	100K			
R8	56Ω				R60	33K			
R9	1500Ω				R61	22K			
R10	56K				R62	39K			
R11	220Ω				R63	330K			
R12	22Ω				R64	2.2meg			
R13	47K			(18K) *	R65	1000Ω			
R14	2200Ω 3W	PW5-2200	3G-2200	#63-4098	R66	68K			
R15	130Ω				R67	2.2meg			
R16	2700Ω				R68	93K			
R17	27K				R69	470Ω 1W			
R18	330Ω				R70	560Ω			
R19	7500Ω 5W	PW5-7500	5G-7500	#63-4733	R71	560Ω			
R20	39K				R72	330K			
R21	47K				R73	330K			
R22	100K				R74	1meg			
R23	15K				R75	120K			
R24	15Ω				R76	100K			
R25	3900Ω				R77	100K			
R26	18K				R78	6.8meg			
R27	180K				R79	120K 2W			
R28	82K				R80	47K			
R29	39K				R81	18K			
R30	7500Ω 5W	PW5-7500	5G-7500	#63-4733	R82	1meg			
R31	39K				R83	100Ω			
R32	47K				R84	100Ω			
R33	100K				R85	8200Ω 3W	PW5-8200	3G-8200	#63-4098
R34	15K				R86	100K			
R35	15Ω				R87	1000Ω			
R36	3900Ω				R88	22K 1W			
R37	18K				R89	6.8Ω			
R38	180K				R90	†			#63-4726
R39	82K				R91	27K 2W			
R40	39K				R92	330K			
R41	330K				R93	150Ω			Note 1
R42	470K								
R43	470K 1W								
R44	100K								
R45	470K 1W								
R46	680Ω								
R47	27K 2W								
R48	390K								
R49	1000Ω 1W								
R50	680Ω 1W								
R51	330K								
R52	680K								

* Alternate Value.
# Zenith Part Number.
† Part of T3.
Note 1. May not be used in some versions.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	ZENITH PART No.	REPLACEMENT DATA
K1	Vert. Integrator		87-5	Centralab PC-407 Sprague V-15
K2	Vert. Feedback		87-4	Centralab PC-408 Sprague V-14

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		ZENITH PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1A	1st Video IF	8-48945 ①					① Complete Assembly Part #8-48594.
B	41.25MC Trap	8-41883					② Complete Assembly Part #8-47967.
L2A	39.75MC Trap					T225	③ Complete Assembly Part #8-46892. Chassis 16E23 uses Part #8-43125 (Complete Assy. Part #6-43126).
B	47.25MC Trap	8-41889					④ Wound on 5600Ω Res.
L3	2nd Video IF						⑤ Complete Assembly Part #8-43717.
B	47.25MC Trap						* Parallel with 5600Ω Resistor.
L4	3rd Video IF	8-46740					
L5	4th Video IF	8-47965 ②					
L6	Peaking (60uh)	8-41879	TV-181	6177	RTC-8594	T304	
L7	RF Choke (6uh)	8-21886	BC-58	4610	RTC-8530	T859	
L8	Peaking (170uh)	8-43619	TV-184	6180	RTC-8597	T310	
L9A	4.5MC Trap	8-50341 ③	TV-120	1462 1FT	RTC-9056	T253	
B	1st Sound IF						
L10	Peaking (250uh)	8-16011	TV-185	6181	RTC-8598	T315	
L11	Peaking (270uh)	8-43618 ④	TV-184 *	6180 *	RTC-8597 *	T310 *	
L12	2nd Sound IF	8-41899 ⑤					
L13	Quadrature	8-47702	TV-121	1480	RTC-8605	T251	
L14	RF Choke	8-22777	BC-566	4613	RTC-8522	T860	

COILS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA							
		ZENITH PART No.	Merit PART No.	Miller PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	Workman TV PART No.
L15	Horiz. Osc.	8-48678							

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ~)	ZENITH PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
L16	.270A	30Ω	1.3 Hy.	95-1681	C-2996	C-2343	26C44	C-23X	

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	ZENITH PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No	
T1	117V ① 1.8A	560VCT ② 280A DC	5V ③ 3.8A	95-1680				R-122A	
	SEC. 3	SEC. 4	SEC. 5						
	6.3V ④ 8.5A								

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		ZENITH PART No.	Merit PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	Vert. Output	95-1656-B	A-2821	VO-35 ①	A-8149	26S75 ②	A-131X	
	Alt. Output	95-1656						
T3	Yoke (Horiz. 13MH)	95-1768	MDF 91		DY-39A	Y-39	Y-40 &	
	(92.9 (Vert. 45MH))		③ ④ ⑤				NW3 ④ ⑤	
	Yoke	95-1771						
	Yoke	95-1654						
T4	Horiz. Output	S-50095					D-20I	
	Horiz. Output	S-47071						

① Cut and tape green lead.
② Use ⅛ to 1 turns ratio. Connect as autoformer.
③ Use original rear cover, centering device, width sleeve, and yoke damping network if necessary.
④ Connect thermal resistor (R90) from yoke terminal #1 to vert. circuit (Height Control).
⑤ Connect yoke terminal #3 to horiz. output transformer terminal #5; yoke terminal #1 to horiz. output transformer terminal #3; connect 1000Ω ½ watt resistor from yoke terminals #2 and #7 to horiz. output transformer terminal #4.
⑥ Cut and form a piece of .010 gauge fish paper inside the yoke itself and support with acetate cement, to provide an insulation between width sleeve and the yoke proper.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA				NOTES
	PRI.	SEC.	ZENITH PART No.	Merit PART No.	Stancor PART No.	Triad PART No.	
T5	10.5K	3-4Ω	95-1569	A-2932	A-3879	24S52	S-17X

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	ZENITH PART No.	GUAM PART No.	
SP1	12"	PM	8-3Ω	49-852 ①	12A82PA	① Used in Model T3388W
SP2	5"	PM	3-4Ω	49-856 ①	5AI23.4	② Used in Models T3301R, Y, T3701Y, T3712E, R, W, T3310E, R, W, T3311R, W, Y,
SP3	12"	PM	8-3Ω	49-852 ②	12A6PA	
SP4	5"	PM	3-4Ω	49-856 ②	5AI23.4	③ Used in Models T3340F, R, W, T3004E, M, R, W
	5 1/4"	PM	3-4Ω	49-75 ③	5JAI	④ Used in Models T3341E, R, W, T3737E, R, W, T3738E, M, R, W, T3739E, R, W.
	8"	PM	3-4Ω	49-780 ③	8AJI	
				49-886 ④		⑤ Used in Models T3705E, R, W.
				49-907 ⑤		⑥ Used in Models T2760F, R, W, T3752R, W, Y, T3753E, M, R, W, T3342E, R, W, T3354E, M, R, T3359M.
	6" x 9"	PM	3-4Ω	49-851 ⑥	69AJ	
				49-902 ⑥		
	4"	PM	14-16Ω	49-818 ⑦	4AI5Z14	⑦ Two used in Models T3751E, M, R, W, T3756E, R, W.
	3 1/2"	PM	14-16Ω	49-949 ⑦	3AI5T	⑧ Used in Models T3753E, M, R, W.
	10"	PM	8-3Ω	49-914 ⑧	10A4AZ6.4	⑨ Two used in Models T2736E, R, W, T3350E, R, W.
	6" x 9"	PM	8-3Ω	49-831 ⑨	69AIZ6.8	⑩ Two used in Models T2706E, R, W.
	5" x 7"	PM	8-3Ω	49-893 ⑩	57AIZ5.5	⑪ Used in Models T3348E, R.
						⑫ Two used in Model T3353W.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			ZENITH PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	N	7/10A 250V S/B	136-38	62-21	333.700 (N 7/10A 250V S/B)	346010	N 7/10	HN 1/2 to 3/4
M2	N	5A 125V S/B	136-42	62-24	333005 (N 5A 250V S/B)	346019	N 5	HN 3 1/2 to 5
M3	2" length of #24 wire							

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		ZENITH PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M4		103-20 *	6GCI *			* Dual Selenium Diode, Common Cathode Type
M5	1N295	103-23 *		1N295 *	1N295 *	* Crystal Diode, Video Detector

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M6	Tuner	175-160	VHF, Used in Model T3338W, STANDARD COIL REPLACEMENT #GG-4220A
	Tuner	175-136	VHF, Models T3342E, R, T3359M, T3004E, M, R, & W
	Tuner	175-160 or 175-136	VHF, Used in Models T3310E, R, W, T3311R, W, Y, T3342W, T3348R, W, T3350E, R, W, T3353W, T3354E, M & R
	Tuner	175-156	VHF, Models T3753E, M, R, & W, T3756E, R, & W, T2760E, R, & W, T2740W, R, & E, T2735W, R, & E, T2712W, R, & E, T2710Y
	Tuner	175-144	VHF, Models T2713W, R, M, & H, T2737W, R, & E
	Tuner	175-154	VHF, Models T2341W, R, & E, T2340W, R, & E
	Tuner	175-123	VHF, Models T2301Y & R
	Tuner	175-154 or 175-144	VHF, Models T2753W, Y, & R, T2739W, R, & E, T2738W, R, M, & E
	Tuner	175-121	VHF with UHF Provisions, Models T2301RU, & YU
	Tuner	175-133	VHF with UHF Provisions, Models T2340EU, RU, & WU, T2341EU, RU, & WU
	Tuner	175-155	VHF with UHF Provisions, Models T2710YU, T2712EU, RU, & WU, T2735EU, RU, & WU, T2740EU, RU, & WU, T2756EU, RU, & WU, T2758EU, MU, RU, & WU, T2756EU, RU, & WU
	Tuner	175-143	VHF with UHF Provisions, Models T2737EU, RU, & WU, T2751HU, MU, RU, & WU
	Tuner	175-163 or 175-143	VHF with UHF Provisions, Models T2738EU, MU, RU, & WU, T2739EU, RU, & WU, T2752RU, WU, & YU
	Tuner	175-8	UHF, Used in all "U" Models
M7	Magnet	8-46005	Corrector (Anti-Pincushion)
M8	Spark Gap	S-42787	
M9	Spark Gap	91-188	
M10	Switch	8-46018	Channel Selector (Power Tuning)
M11	Switch	8-41498	Motor Switch (Power Tuning)
M12	Motor		Tuner Drive (Power Tuning)

WIRING DATA

High Voltage Lead	Use BELDEN No. 8869
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8674
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor 8405 (Round) - 5 Conductor 8488 (Round) - 8 Conductor

FOLDER 2

REMOTE CONTROL RECEIVER
PARTS LIST AND DESCRIPTIONS

S—50264

TUBES

• GENERAL ELECTRIC • RAYTHEON • SYLVANIA •

ITEM No.	USE	TYPE
V15	1st RF Amp.	6AU6
V16	2nd RF Amp.	6AU6
V17	Limiter-Tripler	6AU6
V18	CW-CCW Channel Sel. Disc.	6AL5
V19	Vol. Step - CW Channel Sel. Relay Control Amp.	6CM7
V20	Vol. Step - Muting Disc.	6AL5
V21	CCW Channel Sel. - Muting Relay Control Amp.	6CM7
V22	Rectifier	5Y3GT

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA ZENITH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C63	10	350	22-2943	PRS1620	BR1045	TC62	TD-10-450	TVA-1604	
C64	5	50	22-2941	PRS1310	BBR5-50	TC30	TD-5-50	TVA-1303	
C65	4	200NP	22-2893	PRS7750				TVANS-1602 *	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C66	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C67	100		BPD-001	DD-101	L10T1	CCD-101	GP310	10TS-T10
C68	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C69	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C70	680 10%		1469-00068		5R5T68	CM-19B-681K	MCJ249	MS-368
C71	9 NPO ±1mmf		NPO-DI 10	DTZ-10	C10V9C	CCTO-100	CNO-410	10TCC-Q10
C72	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C73	680 10%		1468-00068		5R5T68	CM-19B-681K	MCJ249	MS-368
C74	100 10%		1468-0001	TCZ-100	22R5T1	CM-19B-101K	MCB235	MS-310
C75	680 10%		1468-00068		5R5T68	CM-19B-681K	MCJ249	MS-368
C76A	1000 10%		DI-1000	DD-102	PM6D1	CCD-102	GP210	10TS-D10
B	1000 10%		DI-1000	DD-102	PM6D1	CCD-102	GP210	10TS-D10
C77	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C78	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C79	680 10%		1469-00068		5R5T68	CM-19B-681K	MCJ249	MS-368
C80	100 10%		1469-0001	TCZ-100	22R5T1	CM-19B-101K	MCB235	MS-310
C81	680 10%		1469-00068		5R5T68	CM-19B-681K	MCJ249	MS-368
C82A	1000 10%		DI-1000	DD-102	PM6D1	CCD-102	GP210	10TS-D10
B	1000 10%		DI-1000	DD-102	PM6D1	CCD-102	GP210	10TS-D10
C83	.047 200V		P288N-047	DD-503	CUB6D1	4DP-3-473	GEM-4147	2TM-S47
C84	.047 200V		P288N-047	DD-503	CUB6D1	4DP-3-473	GEM-4147	2TM-S47
C85	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C86	1000		BPD-001	DD-102	BYA10D1	CCD-472	B-210	5HK-D10
C87	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R94	1.5meg			
R95	150K			
R96	470K			
R97	1.2meg			
R98	68K			
R99	100K			
R100	1meg			
R101	47K			
R102	100Ω			
R103	2.2meg			
R104	2.2meg			
R105	2.2meg			
R106	2.2meg			
R107	1meg			
R108	2.2meg			
R109	2.2meg			
R110	2.2meg			
R111	2.2meg			
R112	1meg			
R113	1meg			
R114	1meg			
R115	100Ω 10W	PW10-100Ω	10W SQ 100Ω	#63-3667
R116	330K			
R117	47K			
R118	10K			
R119	3300Ω			
R120	22K			Note 1

\# Zenith Part Number.

Note 1. Some versions may use 12K in this application.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA ZENITH PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	NOTES
L17	39.5KC Trans.	S-43725					
L18	122.25KC (Pri.) Discriminator	S-24788					
L19	122.25KC (Sec.) Discriminator	S-24789					
L20	114.75KC (Pri.) Discriminator	S-24788					
L21	114.75KC (Sec.) Discriminator	S-24789					

REMOTE CONTROL RECEIVER S-50264
PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA ZENITH PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T6	117V @ .38A	220V @ 020A DC Tap @ 35V @ .001A DC Tap @ 6.3V @ 2.9A	5V @ 2A	95-1612					

POWER RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA ZENITH PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
MR3	.001A	212-21 *		Model 12 *		* Selenium Type

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA ZENITH PART No. FUSE	ZENITH PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M14	3AG	3/4A 250V S/B	136-41		313.750 (3AG 3/4A 250V S/B)	357001	MDL 3/4	4405

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M15	Switch	85-580	Auto-Manual (DPDT Slide Type)
M16	Relay	195-8 or 195-7	Channel Selector (Counterclockwise)
M17	Relay	S-43723	Volume Stop (Includes Stepper Switch #S-43854 & S-43936)
M18	Relay	195-8 or 195-7	Channel Selector (Clockwise)
M19	Relay	S-34705	Muting (Bi-Stable)
M30	Microphone	S-50333	Assembly

FM—AM TUNER PARTS LIST AND DESCRIPTIONS
7F20

TUBES

ITEM No.	GENERAL ELECTRIC * USE	GENERAL ELECTRIC * TYPE	ITEM No.	RAYTHEON * USE	RAYTHEON * TYPE	SYLVANIA * USE	SYLVANIA * TYPE
V23	FM RF Amplifier	6BJ6	V26	2nd IF Amplifier	12BA6		
V24	FM-AM Mixer - FM-AM Osc.	12AT7	V27	FM Limiter	12AU6		
V25	1st IF Amplifier	12BA6	V28	FM Diac. - AM Det.	19T8		
			V29	Rectifier	35W4		

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA ZENITH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C58A	⌀80	150	23-3056	AFH2-19	XH018	FP26.2	TMD-2135	TVL-3442.1	
B	⌀40	150							

FIXED CAPACITORS
Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	EMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C89	15	N330 10%			TCA-15		*		10TCS-Q15
C90	15	N330 10%			TCA-15		*		10TCS-Q15
C91	10000			BPD-01	DD-103	BYA10SI	CCD-103	B-110	5HK-S10
C92	1000			SI 1000	D6-102	BYA10DI	CCD-102	B-310	5HK-D10
C93	1000			SI 1000	D6-102	BTA10DI	CCD-102	B-310	5HK-D10
C94	22	N75 5%	#22-3272				*		
C95	.68			NPO-SI .68	TCZ-R68				
C96	1000			SI 1000	D6-102	BYA10DI	CCD-102	B-310	5HK-D10
C97	4	NPO ±.5mmf				C10V4C	*		10TCC-V39
C98	19	N150 5%	#22-3231				*		10TCP-Q18
C99	10000			BPD-01	DD-103	BYA10SI	CCD-103	B-110	5HK-S10
C100	50			DI-50	DD-500	LL0Q50	CCD-500	GP450	10TS-Q50

FM—AM TUNER PARTS LIST (Continued)

FIXED CAPACITORS (cont)

ITEM No.	RATING		REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	EMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C101	.1	200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-301	2TM-P10
C102	.047	200V		P288N-047	DD-503	CUB2M47	4DP-3-473	GEM-4147	2TM-M47
C103	1000			SI 1000	D6-102	BYA10DI	CCD-103	B-310	5HK-D10
C104	1000			EF-001	MF7-1000		CCF-102	CT250A	
C105	.047	200V		P288N-047	DD-503	CUB2S47	4DP-3-472	GEM-6147	2TM-S47
C106	10000			BPD-01	DD-103	BYA10SI	CCD-103	B-110	5HK-S10
C107	10000			BPD-01	DD-103	BYA10SI	CCD-103	B-110	5HK-S10
C108	4700			BPD-0047	DD-472	BYA10T47	CCD-472	B-247	5HK-D47
C109	10000			BPD-01	DD-103	BYA10SI	CCD-103	B-110	5HK-S10
C110	2200			BPD-0222	DD-222	BYA10D22	CCD-222	B-222	5HK-D22
C111	100			BPD-0001	DD-101	LL0T1	CCD-101	GP310	10TS-T10
C112	10000			BPD-01	DD-103	BYA10SI	CCD-103	B-110	5HK-S10
C113	1000			BPD-001	DD-102	BYA10DI	CCD-102	B-310	5HK-D10
C114	680	10%		DI-680	5RS7H8		CCD-681	GP368	10TS-T68
C115	4700		Note 1	BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C116	10000			BPD-01	DD-103	BYA10SI	CCD-103	B-110	5HK-S10
C117A	4700				DD-472		CCD-472	B-247	
B	4700			BPD-2X0047	DD-472	BYC8DD47	CCD-472	B-247	5HK-2D47

Zenith Part Number. Note 1. Not used in some versions.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

RESISTORS
All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA IRC PART No	WORKMAN TV PART No.	REMARKS
R121	2.2meg			
R123	220Ω			
R123	2200Ω			
R124	10K			
R125	220Ω			
R126	220Ω			
R127	390K			
R128	100K			
R129	1.5meg			
R130	2.2meg			
R131	3.9meg			
R132	1000Ω			
R133	1000Ω			
R134	330K			
R135	4.7meg			
R136	4.7meg			
R137	2.2meg			
R138	220Ω			
R139	100K			
R140	220Ω			
R141	100Ω			
R142	47K			
R143	15K			
R144	150K			
R145	100K			
R146	150K			
R147	820Ω 3W	2W5-820Ω	3G-820Ω	
R148	39Ω 1W			
R149	220K			

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	ZENITH PART No.	REPLACEMENT DATA
K3	FM Diode Filter	25mmf, 100K	105-42	Sprague PRC-11

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA ZENITH PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No	NOTES
L22	FM Ant. Coil	20-642					
L23	FM RF	3-138T					
L24	FM Osc.	3-156R					
L25	Loopstick	3-4013	BC-619	705-A		TS32	
L26	AM Osc.	3-4306T					
L27	1st FM IF	95-1150	FM-251 *	1451 *	RTC-9038 *	T630 *	* Remove Center Mounting Plate.
L28	1st AM IF	95-1250					
L29	2nd FM IF	95-1251					
	2nd AM IF						
L30	3rd FM IF	95-1150	FM-251 *	1451 *	RTC-9038 *	T630 *	
L31	3rd AM IF	95-1102	BC-355 *	12-C6 *	RTC-8634 *	T809 *	
L32	Discriminator	95-1153					

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	REPLACEMENT DATA ZENITH PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No	NOTES
T7	117V @ .38A	120V @ .050A DC Tap @ 6.3V @ .450A	95-1772					

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA ZENITH PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
MR1		103-29 *				* Silicon Type

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES *
M22	Tuning Gang	22-3039	2 Gang, AM (Ant: 7-403mmf, Osc: 9-134mmf)
M23	Switch	85-573	Band Selector (Rotary Wafer Type)
M24	Switch	85-572	Selector, Function (Rotary Type)

AMP PARTS LIST AND DESCRIPTIONS
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WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

TUBES

ITEM No.	GENERAL ELECTRIC * USE	GENERAL ELECTRIC * TYPE	ITEM No.	SYLVANIA * USE	SYLVANIA * TYPE
V30	Left Channel AF Amp. - Right Channel AF Amp.	12AX7	V32	Left Channel Output Right Channel Output	6BQ6 6BQ6
V31	Left Channel AF Amp. - Right Channel AF Amp.	12AU7A/12AU7	V33	Rectifier	5Y3GT

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA ZENITH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C118A	⌀40	450	22-3046	AFH3-43-50	C0344	FP376.9	TMT-3745	TVL-3786	
B	⌀40	450							
C	⌀20	350							
C119	40	25	22-1158	PRS1470	BR4015	TC48	TD-40-150	TVA-1413	
C120	3	30NP	22-3945	PRS7405	BBR4-150	TCN503		TVANS-1215 *	
C121	3	30NP	22-3945	PRS7405	BBR4-150	TCN503		TVANS-1215 *	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS
Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	EMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C123	3300	10%	Note 1	DI-3300		1R5D33	CCD-332	JL-333	10TS-D33
C123	30	N75 10%	#22-3227				*		
C124	2200			BPD-0222	DD-222	BYA10D22	CCD-222	B-222	5HK-D22
C125	.0047	200V 10%		V84C2D47-10%		PM6D47	6DP-1-472	GEM-16247	6TM-D47
C126	4700	10%		DI-4700		PM6D47	CCD-472	JL-347	10TS-D47
C127	.033	200V 10%		V84C2S22-10%		PM4S33	4DP-2-333	GEM-1613	2TM-S33
C128	.047	600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C129	470	10%			DD-471	5RS7X7	CCD-471	GP347	10TS-T47
C130	2200	10%		DI-2200		PM6D22	CCD-222	GP222	10TS-D22
C131	2200	10%		DI-2200		PM6D22	CCD-222	GP222	10TS-D22
C132	3300	10%		DI-3300		PM6D33	CCD-332	JL333	10TS-D33
C133	.022	200V 10%		V84C2S22-10%		PM4S22	4DP-2-223	GEM-1612	2TM-S22
C134	.068	200V 10%		V84C2S66-10%		PM4S68	4DP-3-683		2TM-S68
C135	.1	200V 10%		V84C2P1-10%		PM2P1	2DP-3-104	GEM-301	2TM-P10
C136	.033	600V		P688N-033	DD-303	CUB6S33	6DP-3-333	GEM-6133	6TM-S33
C137	100	10%		DI-100	DD-101	LL0T1	CCD-101	GP310	10TS-T10
C138	47	N75 10%	#22-2376				*		
C139	.22	200V 10%		V84C2P22-10%		PM2P22	2DP-4-224	GEM-2032	2TM-P22
C140	30	N75 10%	#22-3227				*		
C141	2200	10%		DI-2200		PM6D22	CCD-222	GP222	10TS-D22
C142	.0047	200V 10%		V84C2D47-10%		PM6D47	6DP-1-472	GEM-16247	6TM-D47
C143	4700	10%		DI-4700		PM6D47	CCD-472	JL-347	10TS-D47
C144	.022	200V 10%		V84C2S22-10%		PM4S22	4DP-2-223	GEM-1612	2TM-S22
C145	.047	600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C146	470	10%			DD-471	5RS7X7	CCD-471	GP347	10TS-T47
C147	2200	10%		DI-2200		PM6D22	CCD-222	GP222	10TS-D22
C148	2200	10%		DI-2200		PM6D22	CCD-222	GP222	10TS-D22
C149	3300	10%		DI-3300		PM6D33	CCD-332	JL-333	10TS-D33
C150	.22	200V 10%		V84C2P22-10%		PM2P22	2DP-4-224	GEM-2032	2TM-P22
C151	.033	600V		P688N-033	DD-303	CUB6S33	6DP-3-333	GEM-6133	6TM-S33
C153	100	10%		DI-100	DD-101	LL0T33	CCD-101	GP310	10TS-T10
C153	47	N75 10%	#22-2376				*		
C154	.01	600V		P688N-01	DD-103	CUB6S	6DP-2-103	GEM-611	6TM-S10
C155	56	5%	Note 1		TCZ-56	CUQ56C	CCD-560	CWO-456	10TCC-Q56

Zenith Part Number. Note 1. May not be used in some versions.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

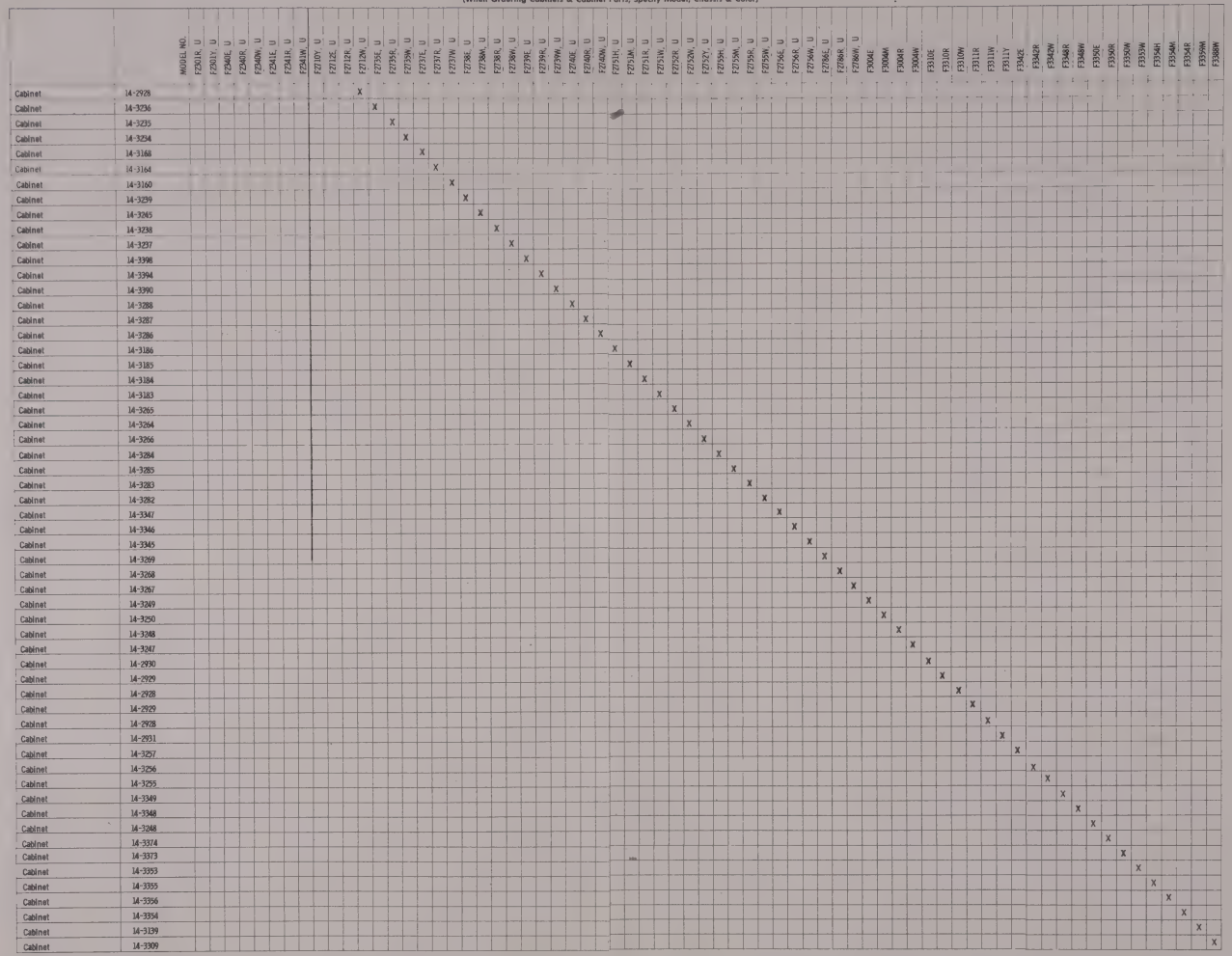
ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA ZENITH PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS—IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R50A	2meg †	(WW)	63-4729	ET-175				Loudness, Left Channel
B	2meg †	(WW)		STR-175				Loudness, Right Channel
R51A	1meg	(WW)	63-4730	B-70	AD47-1meg-Z		FA16A	Bass, Left Channel
B	1meg	(WW)		SR-70	Not Req.		RU16A	Bass, Right Channel
C	Shaft			Not Req.	KBS-3		CS350	
R52A	1meg	(WW)	63-4445	B-69	AD47-1meg-B		FA16L	Treble, Left Channel
B	1meg	(WW)		SR-69	Not Req.		RU16L	Treble, Right Channel
C	Shaft			Not Req.	KBS-3		CS350	
R53A	100Ω	2(WW)	63-4621	WN-101	A43-100	WPK100	R100L	Balance
B	Shaft			Not Req.	KBS-3	Not Req.	Not Req.	

† Taps @ 400K and 1meg.

FOLDER 2

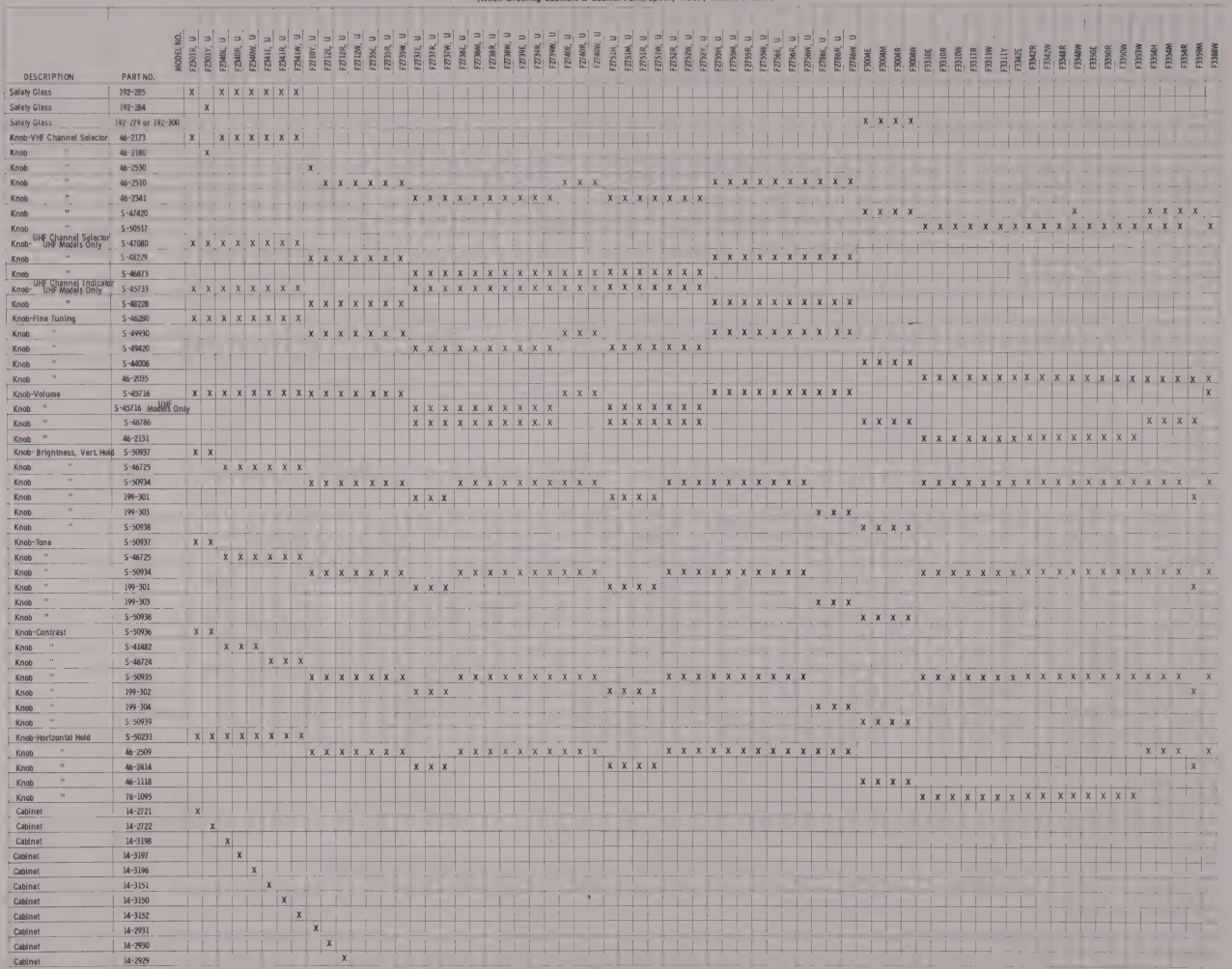
CABINETS & CABINET PARTS (cont)

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)



CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)



AMP PARTS LIST AND DESCRIPTIONS (Continued)

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RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R154	1meg			Note 1
R155	1meg			Note 1
R156	5600Ω			Note 1
R157	150K			
R158	470K			
R159	82K			
R160	2.2meg			
R161	100K			
R162	1200Ω			
R163	270K			
R164	82K			
R165	47K			
R166	2700Ω			
R167	10K			
R168	330K			
R169	1000Ω			
R170	150Ω 2W			
R171	150K			
R172	82K			
R173	2.2meg			

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R174	68K			
R175	1200Ω			
R176	270K			
R177	82K			
R178	47K			
R179	2700Ω			
R180	4700Ω			
R181	330K			
R182	1000Ω			
R183	15K			
R184	2200Ω			
R185	2200Ω			
R186	330Ω			
R187	1000Ω			
R188	1200Ω			
R189	5600Ω			
R190	5000Ω 3W	PW5-5000Ω	3G-5000Ω	#63-4687
R191	470K			
R192	33K			Note 1

Note 1. May not be used in some versions.

Zenith Part Number.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	SEC. 1	SEC. 2	REPLACEMENT DATA ZENITH PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T8	117V @ .62A	700VCT @ .090A DC	5V @ 2A	95-1743	P-3152①	PC-8409①	24R40U ①	R-111A ①	① Drill new mounting hole(s).
	SEC. 3	SEC. 4	SEC. 5						
	6.3VCT @ 2.2A								

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	SEC.1	REPLACEMENT DATA ZENITH PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T9	4100Ω	6-8Ω	95-1790AJ ①					① Alternate Part #95-1790.
		SEC. 2						
		75Ω						
	PRI.	SEC.1						
T10	7600Ω	12-16Ω CT	95-1780B ②					② Alternate Part #95-1780.
		SEC. 2						
		25Ω						

PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	REPLACEMENT DATA ZENITH PART No. CARTRIDGE	NEEDLE*	ASTATIC PART No. CARTRIDGE	NEEDLE*	ELECTRO-VOICE PART No. CARTRIDGE	NEEDLE*	SONOTONE PART No. CARTRIDGE	NEEDLE*	NOTES
M25			13TB		26S	S1-1 * & S3-3 *	8TA4-S	N-8TA-S *	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA ZENITH PART No. FUSE	HOLDER	LITTELFUSE PART No. FUSE	HOLDER	BUSS PART No. FUSE	HOLDER
M26	3AG	2A 250V	136-36		312002 (3AG 2A 250V)	342001	AGC 2	HKP

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M27	Switch		Mono-Stereo (Lever Type, Rotary)

VHF TUNER PARTS LIST AND DESCRIPTIONS

175–160

TUBES

ITEM No.	USE	TYPE (◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆)
V201	RF Amplifier	6FQ6 (6FH5) *
V202	Mixer - Osc.	6CG8A (6CG8) *

* Alternate

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	27 N750 10%		N750-DI 25	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C202	27 N750 10%		N750-DI 25	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C203	27 N750 10%		N750-DI 25	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C204	27 N750 10%		N750-DI 25	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C205	30 +7-3.5%	#22-3111						
C206	28 10%		NPO-DI 25	TCZ-27	C10Q27C	CCTO-270	CNO-427	10TCC-Q27
C207	1000		EF-001	MFT-1000		CCF-102	CT280A	
C208	1.8-7	#22-3191		829-7				
C209	100 5%	#22-3192						
C210	.5-3.5	#22-3190						
C211	33 10%		NPO-DI 33	DTZ-33	C10Q33C	CCTO-330	CNO-433	10TCC-Q33
C212	.5-3.5	#22-3190						
C213	1000		BPD-001	DD-102	BYA10DI	CCD-102	B-210	5HK-D10
C214	6.8 ±.25mmf		NPO-DI 6.8	DTZ-6R8	C10V68C	CCTO-6R8	CNO-568	10TCC-V68
C215	18 N220 10%	#22-3025				*		10TCR-Q18
C216	1000		EF-001	MFT-1000		CCF-102	CT280A	
C217	1000		EF-001	MFT-1000		CCF-102	CT280A	

\# Zenith Part Number
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R201	47K				R205	4700Ω			
R202	1000Ω				R206	4700Ω			
R203	2700Ω				R207	4700Ω 7W	PW7-4700Ω	7G-4700Ω	
R204	220K								

COILS (RF-IF)

ITEM No.	USE	ZENITH PART No.	NOTES	ITEM No.	USE	ZENITH PART No.	NOTES
L201	Ant. Trans.	S-47681		L205F	Ant., RF, Mixer, and Osc. Coils	174-27	Channel 7
L202	IF Trap	20-762		G	"	174-28	Channel 8
L203	IF Trap	20-763		H	"	174-29	Channel 9
L204	IF Trap	20-762		J	"	174-30	Channel 10
L205A	Ant., RF, Mixer and Osc. Coils	174-22	Channel 2	K	"	174-31	Channel 11
B	"	174-23	Channel 3	L	"	174-32	Channel 12
C	"	174-24	Channel 4	M	"	174-33	Channel 13
D	"	174-25	Channel 5	L206	RF Choke	20-758	
E	"	174-26	Channel 6	L207	Mixer Plate Coil	S-47370	

VHF TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS FOR TUNERS 175-133, -134, -136, -143, -144, -155, -156, -160, -164

The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: A201 thru A212 ..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8987
WALSCO #2531
A213, A214, A215..... GENERAL CEMENT #5000, 5003, 8276, 8290
WALSCO #2512, 2525

VHF RF AND MIXER ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.
Connect the negative lead of a 4.5 volt bias supply to point Ⓣ. Positive to chassis.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
2.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	195MC	193.25MC 197.75MC	10	Vert. Amp. thru 10K to point Ⓤ. Low side to chassis.	A201, A202, A203	Adjust A201 and A202 for maximum amplitude and symmetry with markers as shown in Fig. 201. Increase bias for MINIMUM amplitude of response curve. Without changing the bias adjust A203 to obtain MINIMUM response on the scope.
3.	"	"	213MC	211.25MC 215.75MC	13	"	A204	Adjust for maximum amplitude of response similar to Fig. 201. Adjust by compressing or expanding coil turns.
			207MC	205.25MC 209.75MC	12		A205	
			201MC	199.25MC 203.75MC	11		A206	
			195MC	193.25MC 197.75MC	10		A207	
			189MC	187.25MC 191.75MC	9		A208	
			183MC	181.25MC 185.75MC	8		A209	
			177MC	175.25MC 179.75MC	7		A210	
			85MC	83.25MC 87.75MC	6		A211	
			79MC	77.25MC 81.75MC	5		A212	
			69MC	67.25MC 71.75MC	4		A213	
			63MC	61.25MC 65.75MC	3		A214	
			57MC	55.25MC 59.75MC	2		A215	

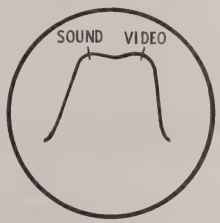


FIG. 201

VHF OSCILLATOR ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.
Set the Fine Tuning to the center of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 47K across Video Det. load.	A216	Adjust to place sound marker in trap notch as in Fig. 202. Video marker should fall at 50%.
			207MC	205.25MC 209.75MC	12		A217	
			201MC	199.25MC 203.75MC	11		A218	
			195MC	193.25MC 197.75MC	10		A219	
			189MC	187.25MC 191.75MC	9		A220	
			183MC	181.25MC 185.75MC	8		A221	
			177MC	175.25MC 179.75MC	7		A222	
			85MC	83.25MC 87.75MC	6		A223	
			79MC	77.25MC 81.75MC	5		A224	
			69MC	67.25MC 71.75MC	4		A225	
			63MC	61.25MC 65.75MC	3		A226	
			57MC	55.25MC 59.75MC	2		A227	

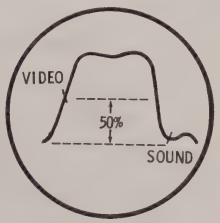
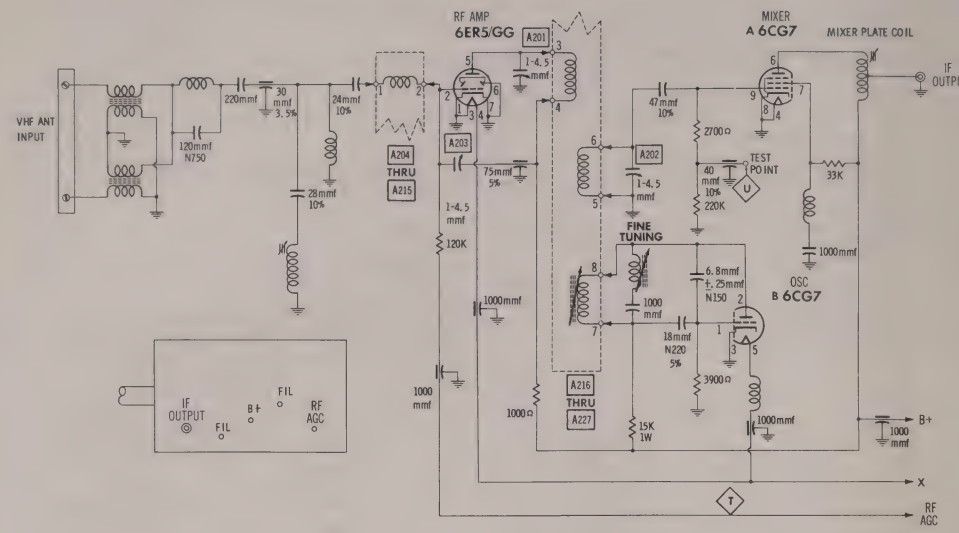


FIG. 202



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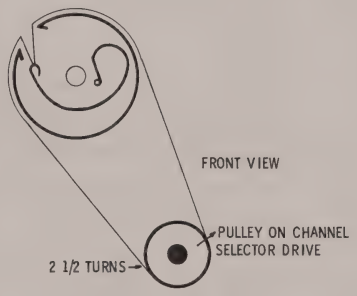
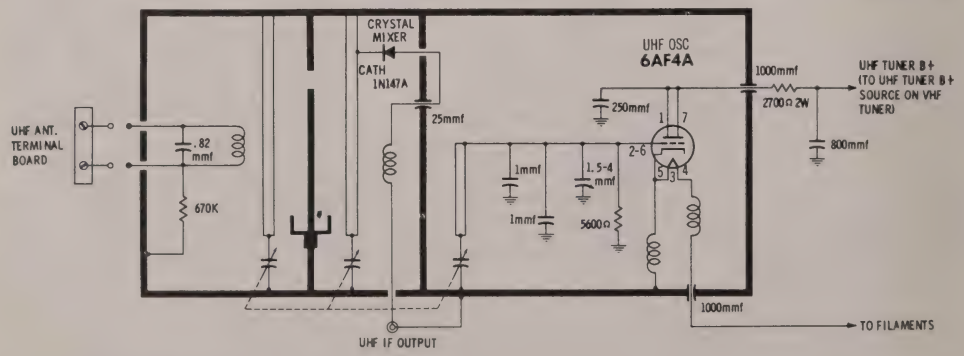
VHF TUNER 175-134, -136



UHF DRIVE CORD STRINGING



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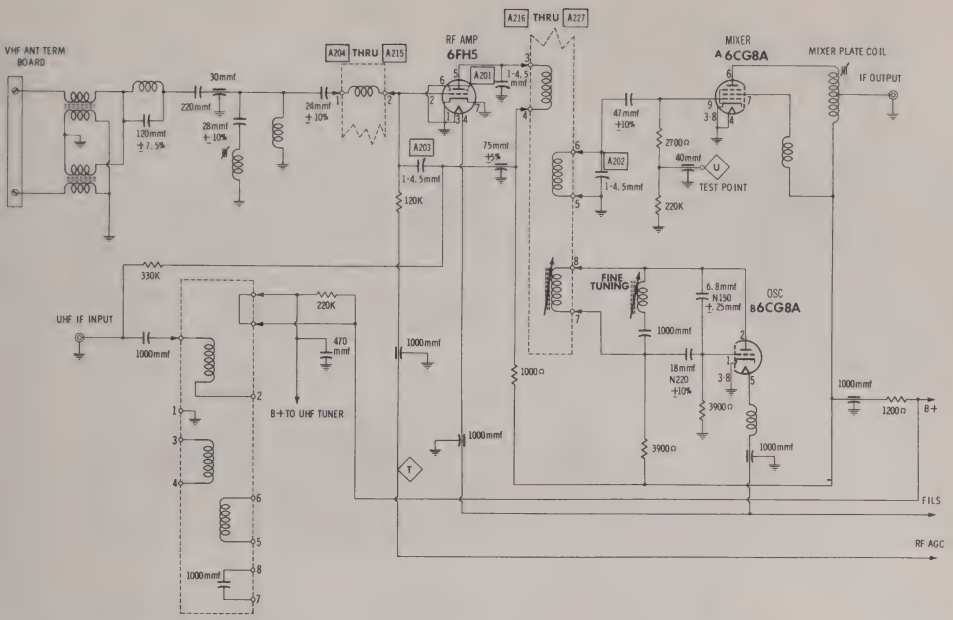
UHF TUNER 175-8



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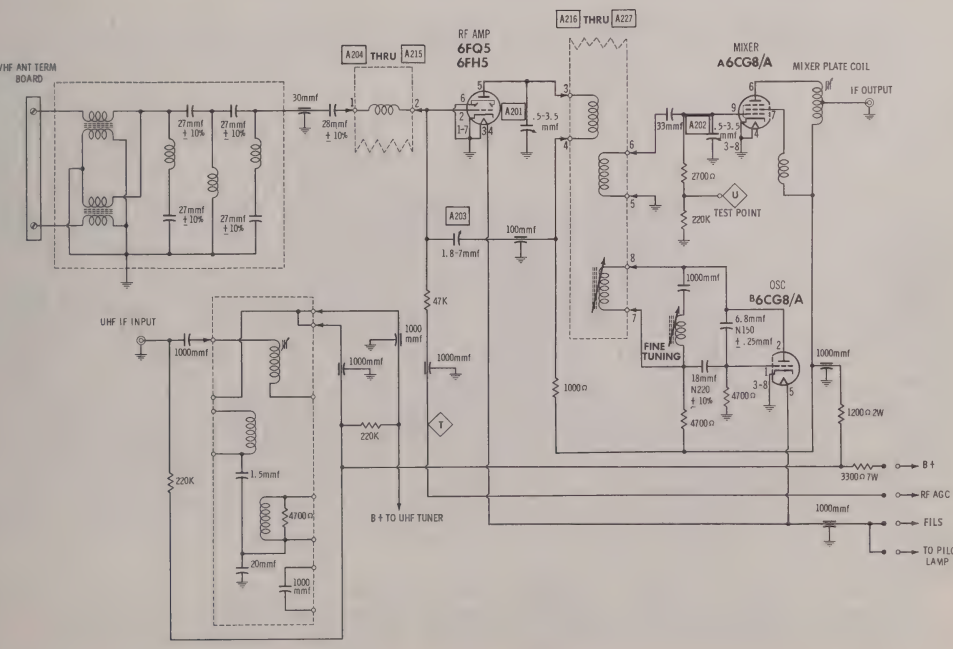
VHF TUNER with UHF Provisions 175-143



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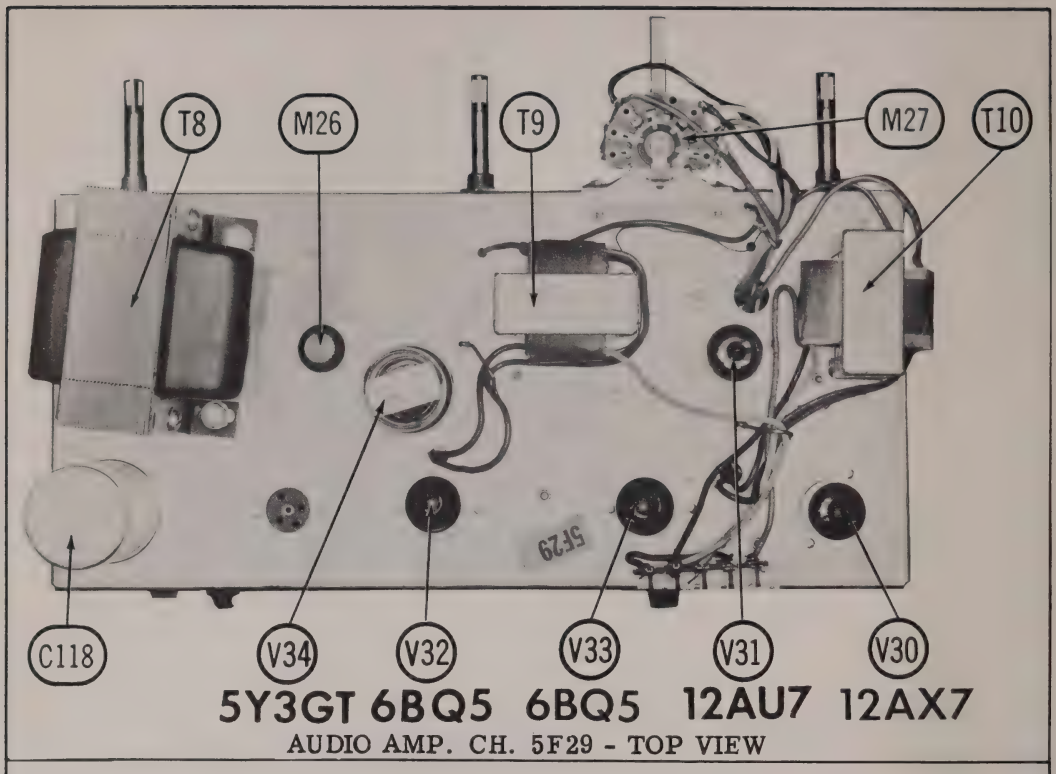
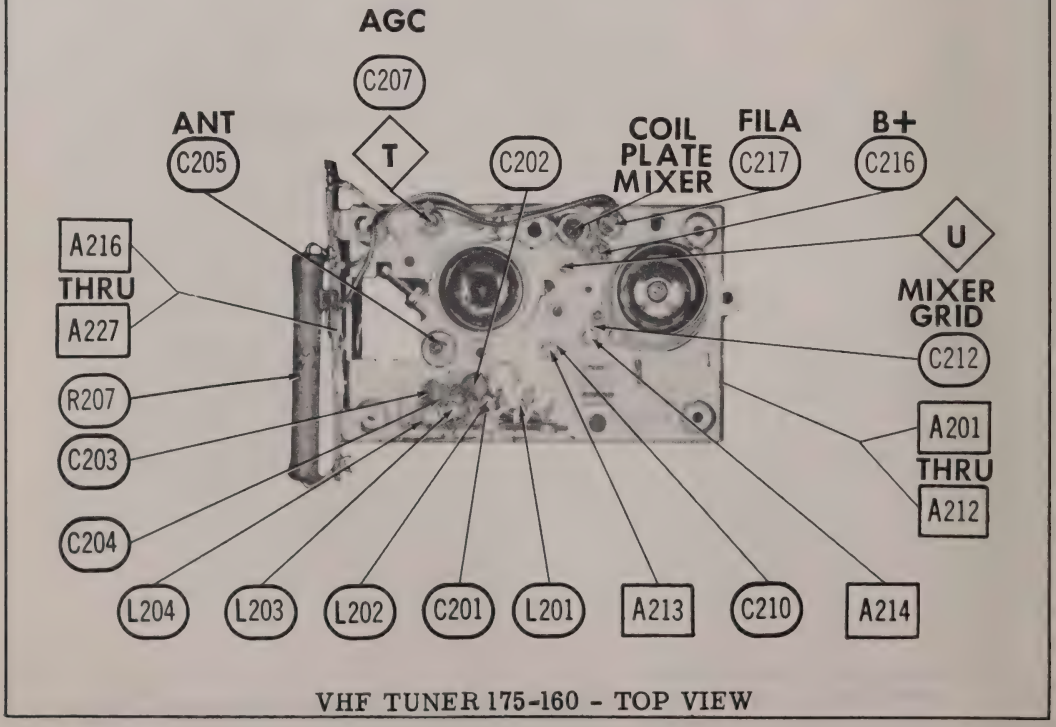
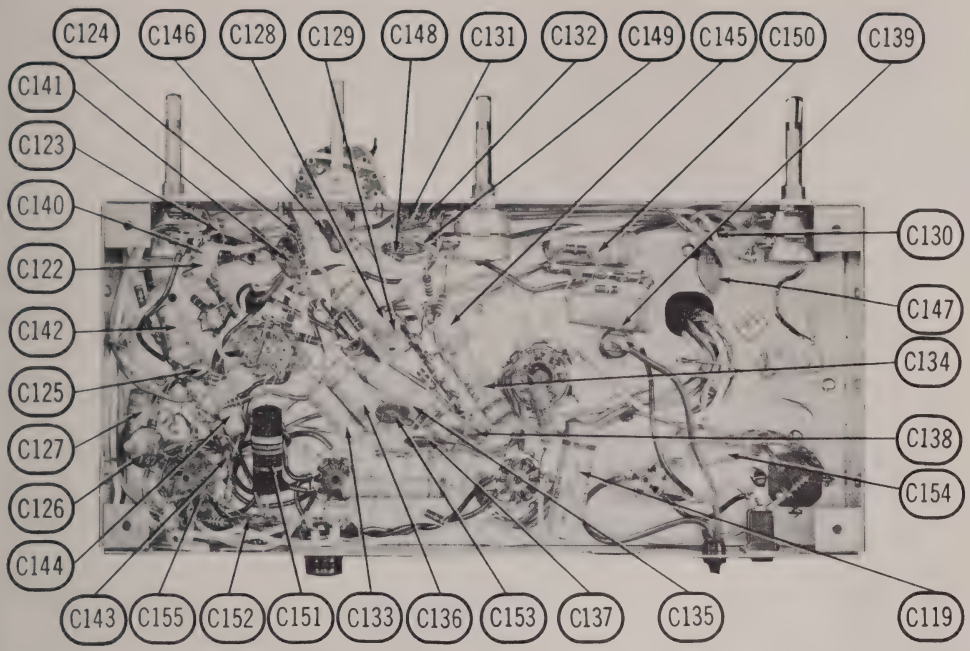
VHF TUNER with UHF Provisions 175-155



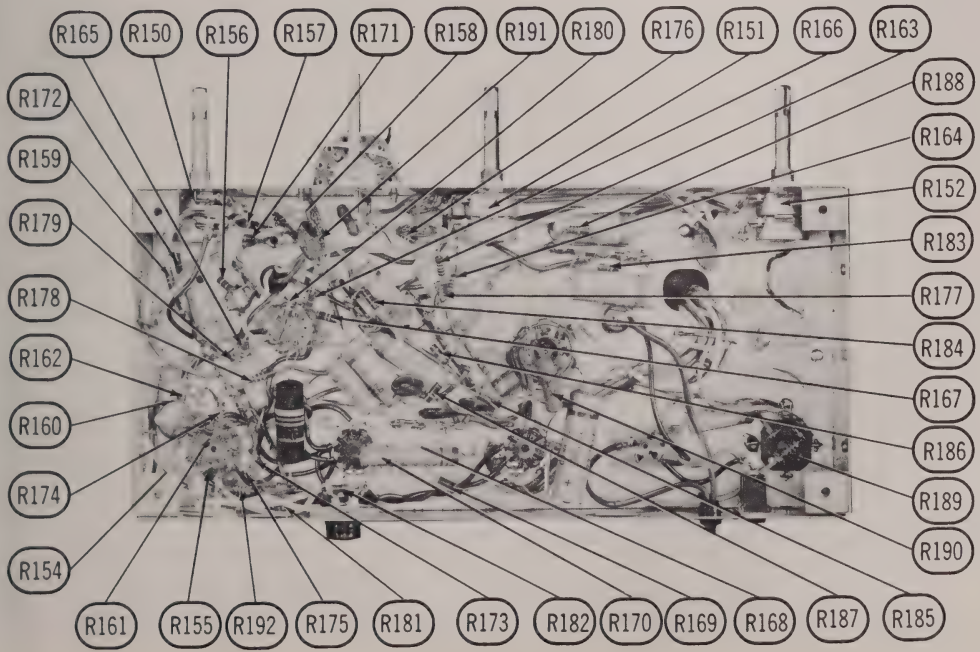
AUDIO AMP. CH. 5F29 - TOP VIEW



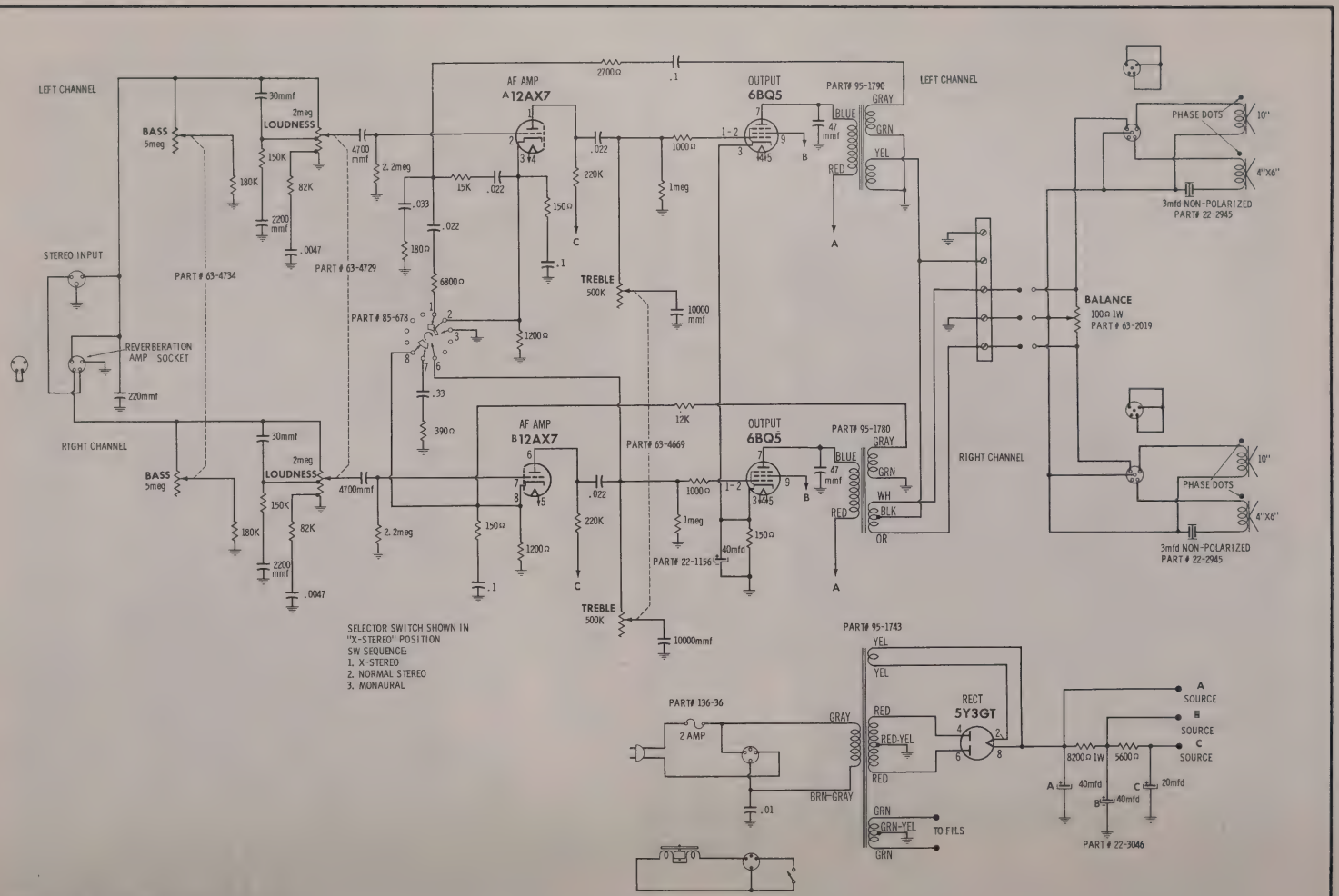
VHF TUNER 175-160 - TOP VIEW



AUDIO AMP. CH. 5F29 BOTTOM VIEW - CAPACITOR IDENT.



AUDIO AMP. CH. 5F29 BOTTOM VIEW - RESISTOR IDENT.



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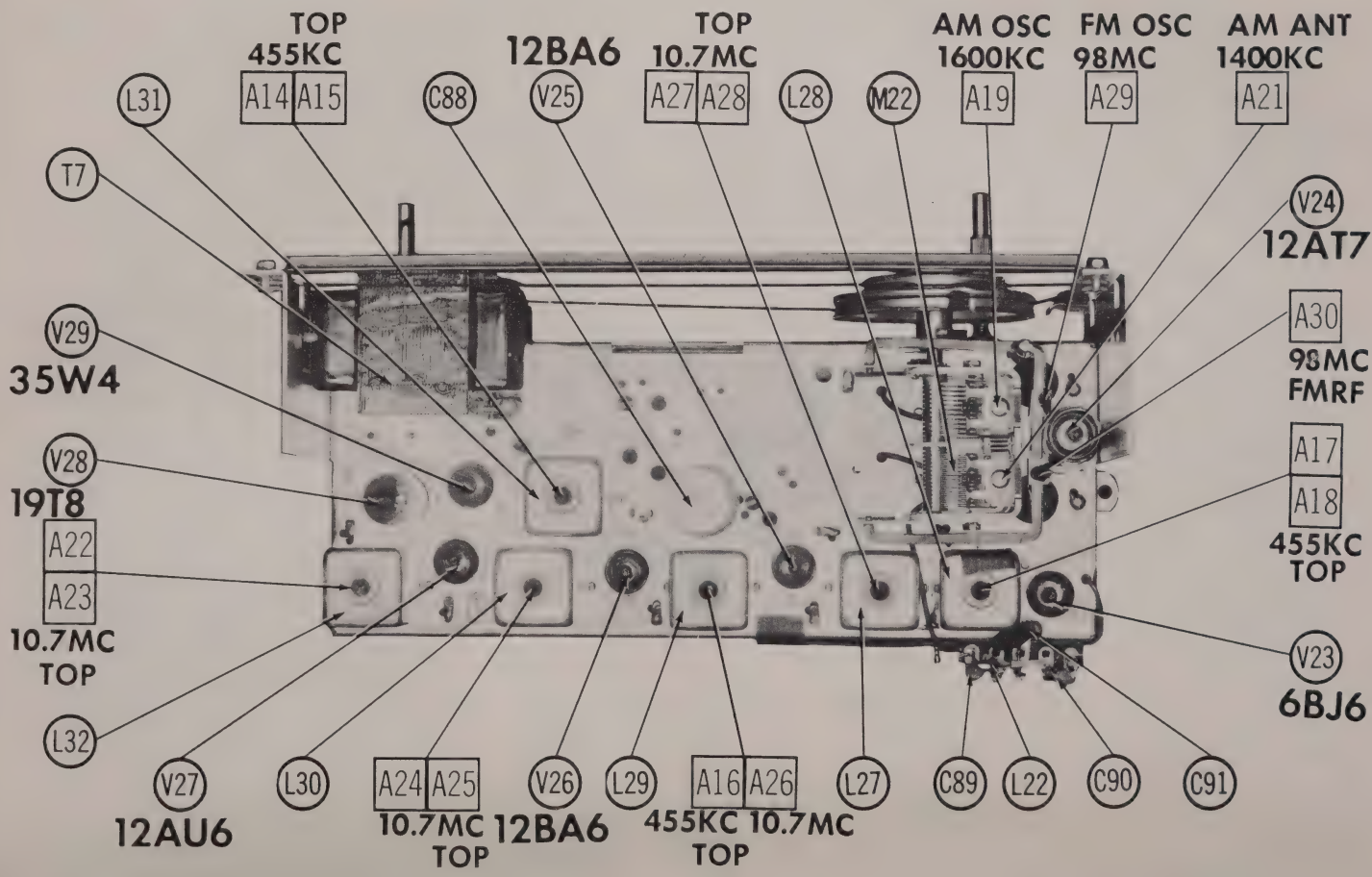
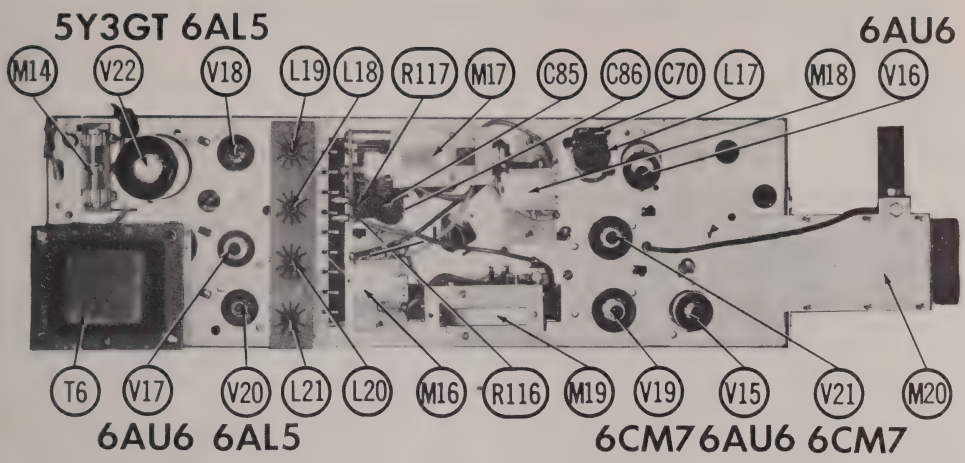
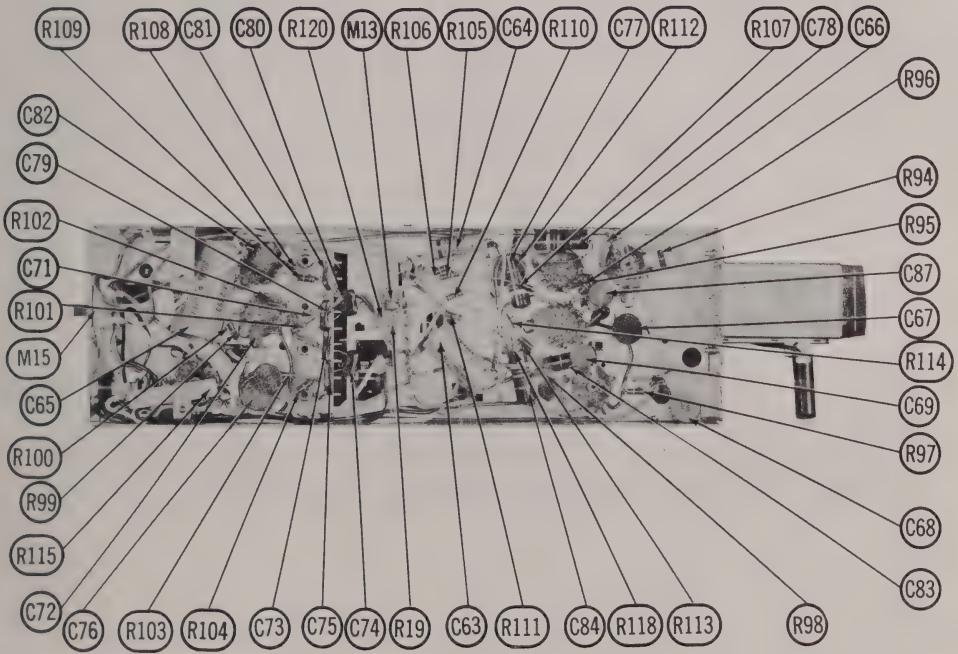
AUDIO AMP. 4F20



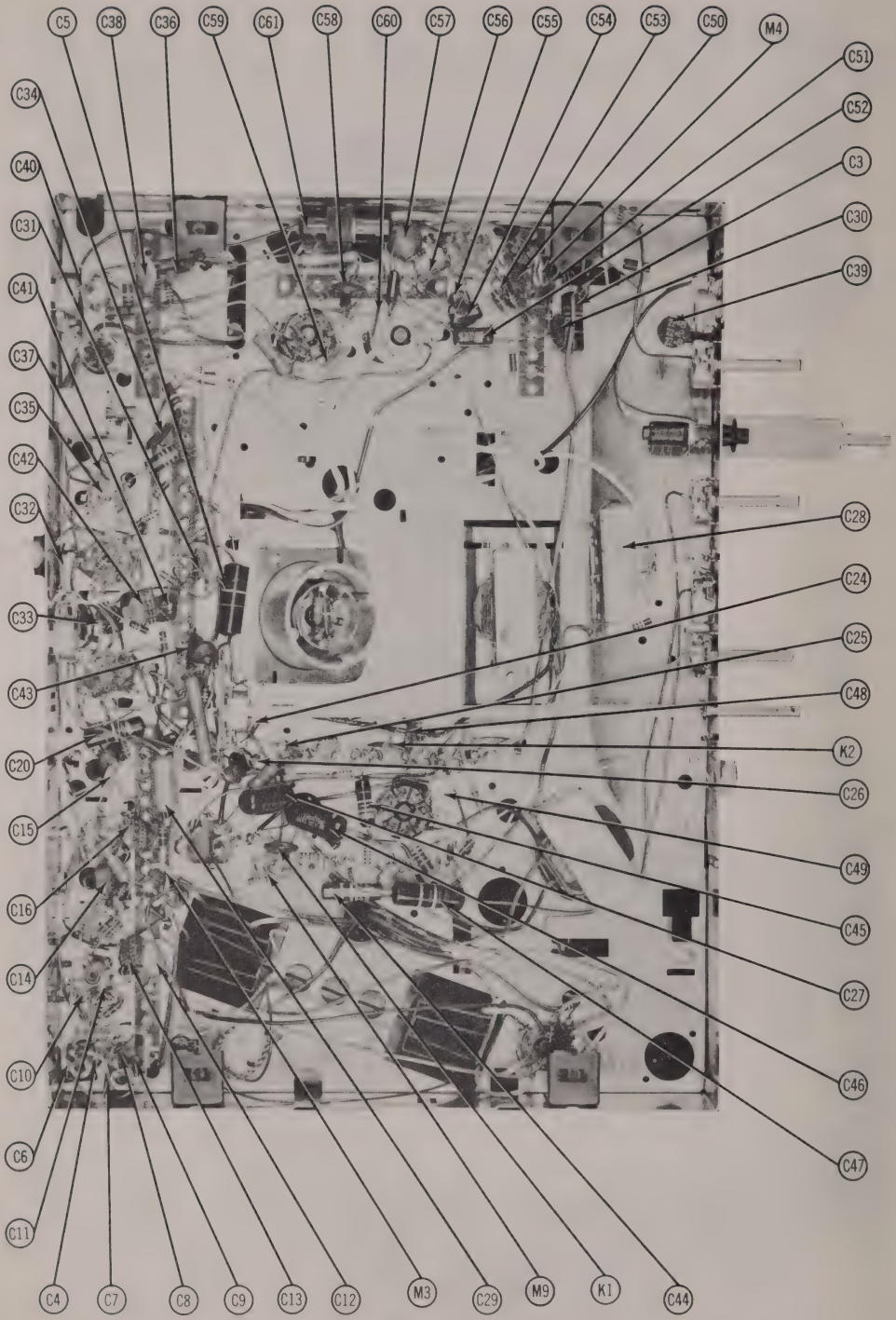
FM-AM TUNER 7F20 - TOP VIEW



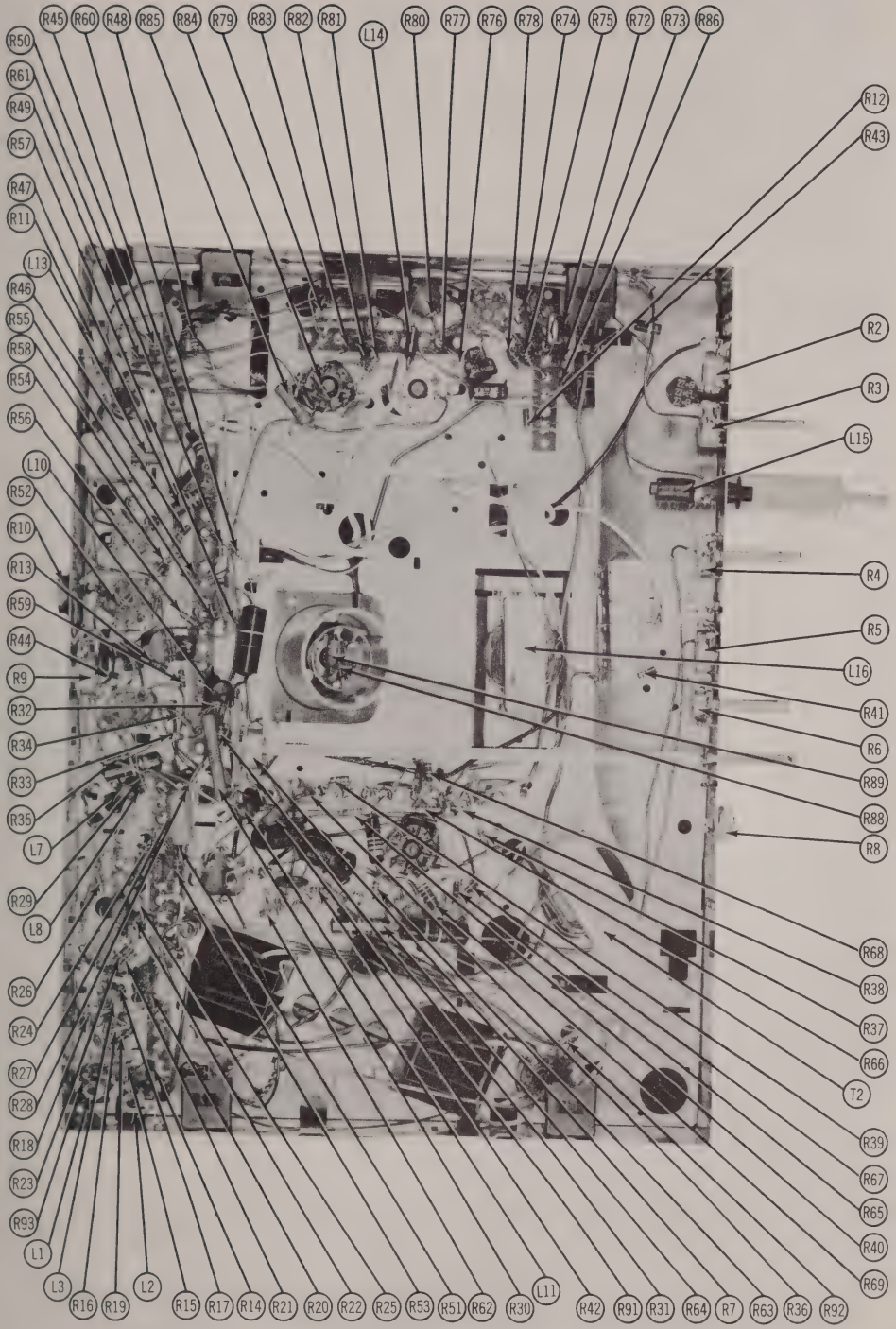
REMOTE CONTROL RECEIVER S-50264 - TOP VIEW



REMOTE CONTROL RECEIVER S-50264 - BOTTOM VIEW

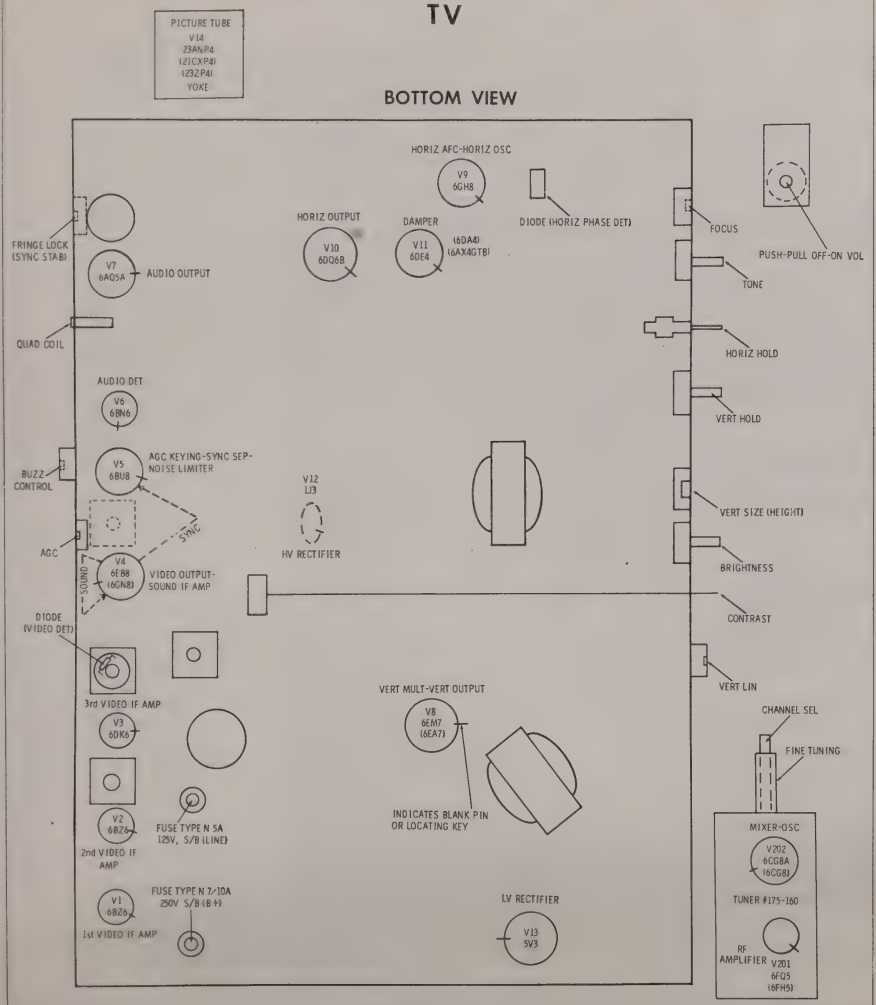


TV CHASSIS BOTTOM VIEW - CAPACITOR & MISC. IDENT.



TV CHASSIS BOTTOM VIEW - RESISTOR & INDUCTOR IDENT.

TUBE PLACEMENT CHART
TV

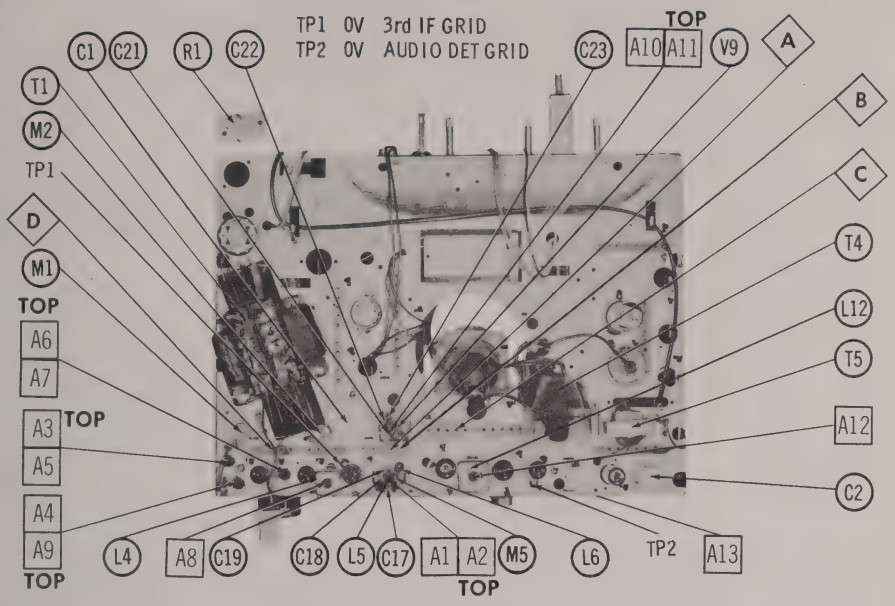


RESISTANCE MEASUREMENTS
TV

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BZ6	1.5meg	1550Ω	.1Ω	0Ω	▪ 220Ω	▪ 220Ω	1500Ω		
V2	6BZ6	35K	INF	.1Ω	0Ω	† 270Ω	† 270Ω	▪ 22Ω		
V3	6DK6	.1Ω	120Ω	.1Ω	0Ω	† 8200Ω	† 8200Ω	0Ω		
V4	6EB8	0Ω	100K	† 470K	.1Ω	0Ω	15Ω	3000Ω	† 27K	† 7500Ω
V5	6BU8	• 6000Ω	† 22K	680K	.1Ω	0Ω	110K	• † 400K	† 75K	† 8.2meg
V6	6BN6	• 300Ω	.2Ω	.1Ω	0Ω	† 27K	3.6Ω	† 390K		
V7	6AQ5A	• 3000Ω	680Ω	.1Ω	0Ω	† 1850Ω	† 1000Ω	NC		
V8	6EM7	2.2meg	† 400Ω	• 1500Ω	• 600K	• † 5meg	0Ω	0Ω	.1Ω	
V9	6GH8	† 100K	100K	† 47K	0Ω	.1Ω	† 120K	28Ω	0Ω	1.4meg
V10	6DQ6B	TP	.1Ω	TP	† 8300Ω	1meg	NC	0Ω	0Ω	TOP CAP † 9Ω
V11	6DE4	NC	NC	3meg	NC	† 50Ω	NC	0Ω	.1Ω	
V12	1J3		PINS 1 THRU 8 HAVE INFINITE RESISTANCE							TOP CAP † 290Ω
V13	5V3	NC	¶ 30K	TP	27Ω	NC	24Ω	TP	¶ 30K	
V14	23ANP4	Pin 1 0Ω	Pin 2 18K	Pin 6 • 2meg	Pin 10 30K	Pin 11 • 160K	Pin 12 .1Ω			
V201	6FQ5	0Ω	3meg	0Ω	.1Ω	† 5700Ω	0Ω	0Ω		
V202	6CG8A	4700Ω	† 9400Ω	0Ω	0Ω	.1Ω	† 4700Ω	† 4700Ω	0Ω	220K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM PIN 8 OF V13.
▪ MEASURED FROM PIN 2 OF V2.
† MEASURED FROM PIN 3 OF V11.

NC NO CONN.
TP TIE POINT



TV CHASSIS - TOP VIEW

SERVICING IN THE FIELD

SAFETY GLASS REMOVAL

The safety glass is an integral part of the picture tube (23" Models).

FUSE

TV: A 5 Amp. S/B (Line) fuse, a 7/10 Amp. S/B (B+) fuse, and a fuse wire (Fil.) are used for receiver protection. (For fuse location, see "Tube Placement Chart". For fuse wire location, see M3 in TV photo "TV Chassis Bottom View -Capacitor & Misc. Ident.").

Remote Control Receiver: A 3/4 Amp. S/B fuse is used for receiver protection. (For location, see M14 in photo "Remote Control Receiver Chassis - Top View")

Amp.: A 2 Amp. (Line) fuse is used for receiver protection.

VHF TUNER OSCILLATOR ADJUSTMENT

For touch-up of VHF Tuner Osc. it is necessary to remove tuner.

AGC

The AGC may be varied by means of an AGC Control. For location, see "Tube Placement Chart").

FOCUS

The focus may be varied by means of a Focus Control. (For location, see "Tube Placement Chart").

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

The Horizontal Frequency Slug is used for the Horizontal Hold. (For location, see "Tube Placement Chart").

WIDTH

The width may be varied by adjusting a metallic sleeve, located between the yoke and the picture tube neck, in or out of the yoke.

BUZZ ADJUSTMENT

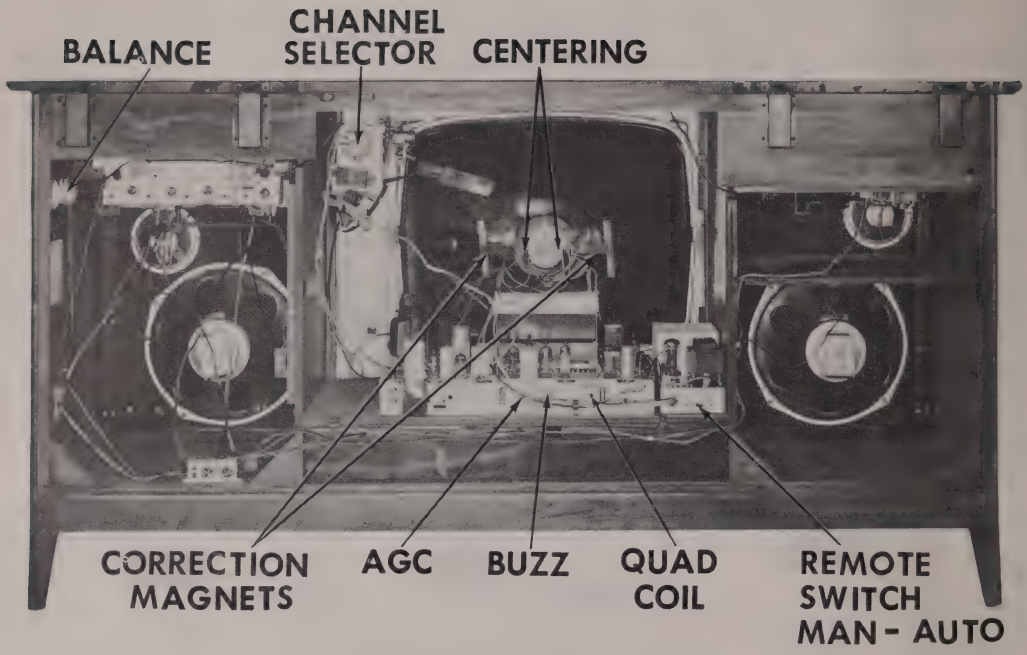
To eliminate intercarrier buzz, adjust the Buzz Control for MINIMUM buzz and maximum sound. (For location, see "Tube Placement Chart").

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

PINCUSHION CORRECTION

Reduce the picture size so that the sides of the raster are visible. Position the magnets so that all sides are straight.



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

The Horizontal Hold is equipped with a stop which limits rotation to approximately 270° with the knob on the shaft. To adjust, remove the knob and adjust by turning the shaft until the picture is synchronized to the point where it is virtually impossible to disrupt horizontal synchronization when switching from channel to channel. Install the knob with its pointer centered between the stops.

DISASSEMBLY INSTRUCTIONS

TV CHASSIS REMOVAL MODEL F3388W

1. Disconnect antenna leads.
2. Remove 7 wood screws holding rear cover.
3. Remove rear cover.
4. Remove On-Off Switch Knob.
5. Remove 2 screws holding On-Off Switch Bracket.
6. Remove 3 screws holding Remote Control Receiver.
7. Disconnect all necessary plugs and leads to Remote Control Receiver, VHF Tuner, and speakers.
8. Remove Remote Control Receiver.
9. Remove 4 TV chassis bolts.
10. Remove 4 screws holding picture tube mounting to front mask.
11. Remove TV chassis (with picture tube).
12. Remove 2 screws holding VHF Tuner Assembly.
13. Remove VHF Tuner Assembly.

PICTURE TUBE REMOVAL

The picture tube is mounted on the TV chassis. It is necessary to remove the TV chassis and Remote Control Receiver for picture tube removal.

PHOTOFACT® Folder with CIRCUITRACE®

ARVIN MODELS 10R32, 10R38, 10R39 (Ch. 1.49801)

ARVIN MODELS 10R32, 10R38, 10R39 (Ch. 1.49801)

MODEL 10R32

TRADE NAME	Arvin Models 10R32, 10R38, 10R39 (Ch. 1.49801)
MANUFACTURER	Arvin Industries, Inc., Columbus, Indiana
TYPE SET	AC-DC Operated 5 Tube AM Receiver
POWER SUPPLY	105 – 125 Volts AC-DC
TUNING RANGE—BROADCAST	540 – 1670KC RATING 20 Watts, .2 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1mfd capacitor in series with low side of signal generator. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1 thru A4, A6... GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545
A5, A7..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

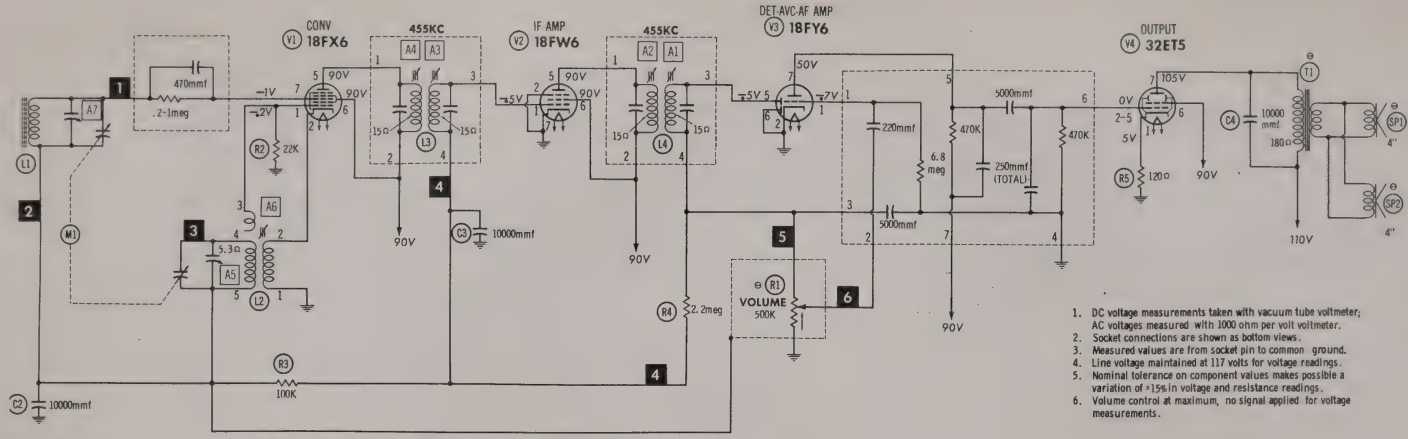
	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .05mfd to pin 7 (grid) of Converter. Low side to chassis.	455KC (400~ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	Loop	1670KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	600KC	600KC	"	A6	"
4.	"	1400KC	1400KC Signal.	"	A7	Adjust for maximum output. Repeat Steps 2, 3 and 4.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

KG357

SET 525 FOLDER 3



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

L3 & L4 TERMINAL GUIDE

L2 TERMINAL GUIDE

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

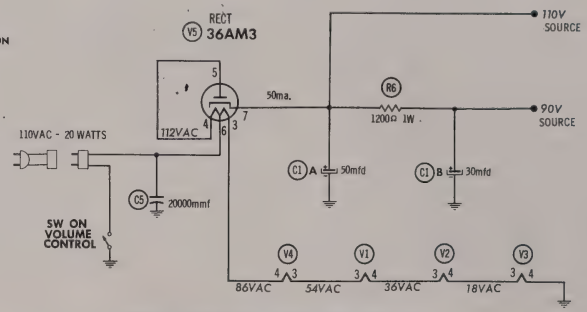
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	18FX6	22K	0Ω	60Ω	40Ω	†1200Ω	†1200Ω	2.8meg
V2	18FW6	2.7meg	0Ω	40Ω	20Ω	†1200Ω	†1200Ω	0Ω
V3	18FY6	6.8meg	0Ω	20Ω	0Ω	500K	0Ω	†470K
V4	32ET5	120Ω	470K	60Ω	100Ω	NC	†1200Ω	†180Ω
V5	36AM3	NC	NC	100Ω	140Ω	140Ω	135Ω	¶

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 7 OF V5. NC NO CONNECTION



NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

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with CIRCUITRACE

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ARVIN MODELS 10R32, 10R38, 10R39 (Ch. 1.49801)

PARTS LIST AND DESCRIPTIONS

TUBES

◆ GENERAL ELECTRIC ◆			RAYTHEON ◆		SYLVANIA ◆	
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Converter	18FX6	V4	Output	32ET5
V2	IF Amplifier	18FW6	V5	Rectifier	36AM3
V3	Det. -AVC-AF Amp.	18FY6			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	ARVIN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	50	150	43711-9	PWH2-15-05	B0150 ‡	PFP213.1	TMD-2105 †	PCL-2432	
B	30	150							

‡ Use Printed Circuit Adaptors #55277 & 55278.
† Use Printed Circuit Adaptor Kit TMA.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C3	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C4	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C5	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ARVIN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	500K	½	45250-24①					Volume & Switch

① Some versions may use Part #47500-10.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	22K				R5	120Ω			
R3	100K				R6	1200Ω 1W			
R4	2.2meg								

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		ARVIN PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	
L1	Loopstick	46568-3	BC-419	705-A		
L2	Osc.	43644-1				
L3	Input IF	44282-1	BC-356	13-PC9	RTC-8683	
L4	Output IF	44282-1	BC-357	13-PC10	RTC-8684	

PRINTED BOARD

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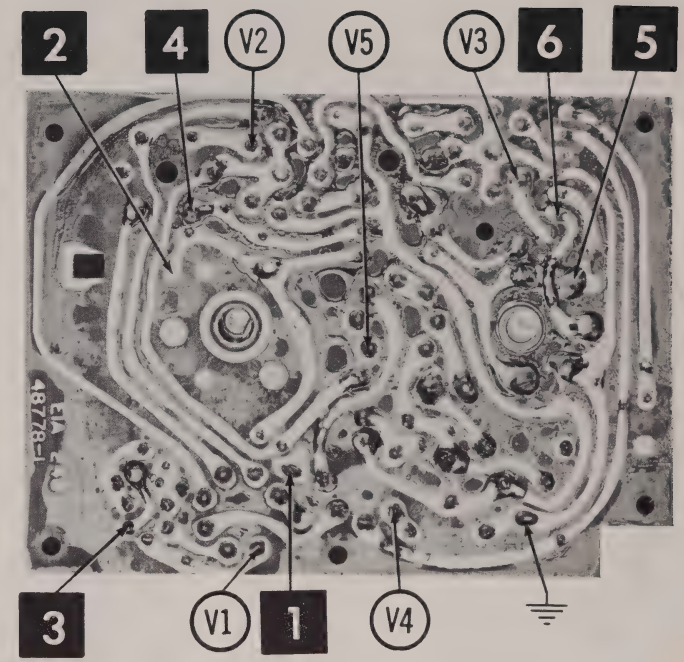
ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	ARVIN PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2600Ω	3-4Ω	42700-20 ①	A-3025	A-3332	24S53	S-12X	① Alternate Part #42700-21

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	ARVIN PART No.	QUAM PART No.	
SP1	4"	PM	6-8Ω	45600-13	4A07Z6	① Alternate Part #45600-13
SP2	4"	PM	6-8Ω	45600-7①	4A05Z6	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	ARVIN PART No.	REPLACEMENT DATA
K1	Conv. Grid Coupling	470mmf, .2-1meg	47796-1	Centralab RC-471 Sprague AC1-1
K2	Audio Coupling	220mmf, 250mmf, 5000mmf, 5000mmf, 470K, 470K, 6.8meg	43743-2	Aerovox PA-512-3 Centralab PC-158 Sprague DT-5

MISCELLANEOUS

ITEM No.	PART NAME	ARVIN PART No.	NOTES
M1	Tuning Cap.	47953-1	2 Gang

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

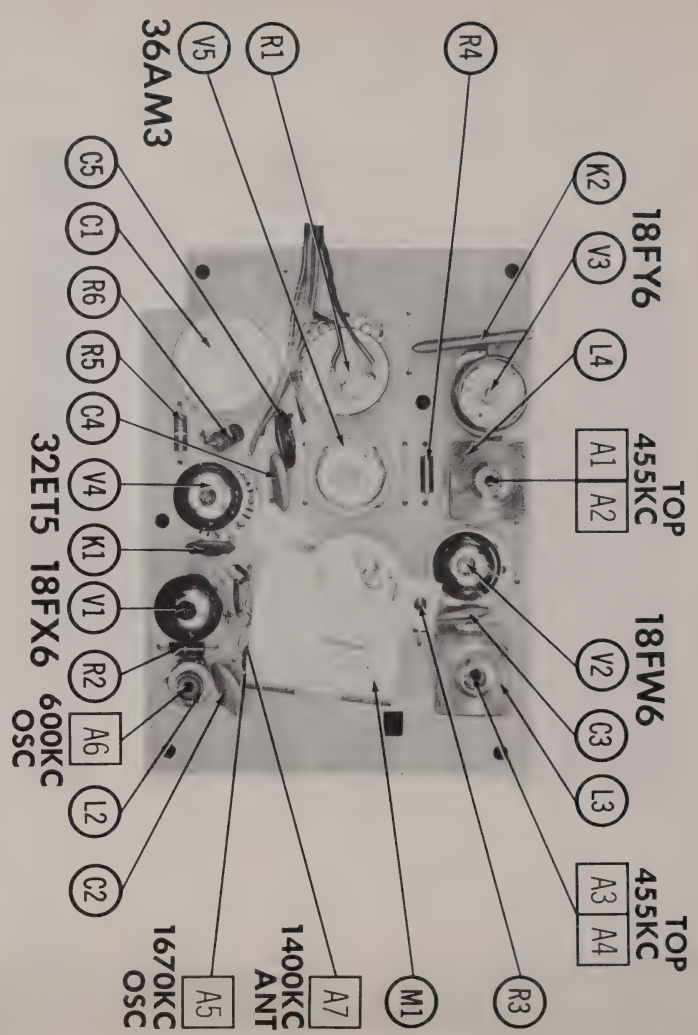
NAME	PART NO.	DESCRIPTION
Dial	48118-1	
Knob	48111	
Cabinet Back	48894-208	Sandstone
Cabinet Back	48894-149	Gray
Cabinet Back	48894-42	Persimmon
Cabinet Front	48127-107	Ivory

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord (Interlock Type) ..... Use BELDEN No. 8874

CHASSIS—TOP VIEW



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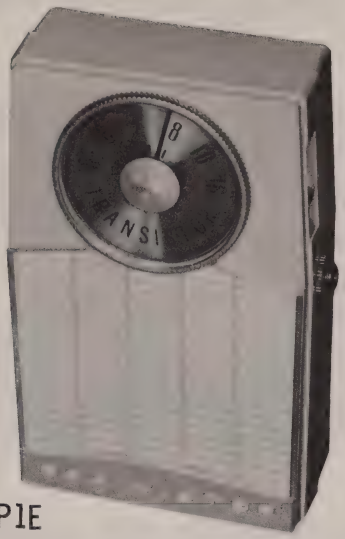
RCA VICTOR MODELS 1RH10, 1RH11, 1RH12, 1RH13, 1TP1E, 1TP1HE, 1TP1JE (Ch. RC-1199B, D)

RCA VICTOR MODELS
1RH10, 1RH11, 1RH12, 1RH13, 1TP1E,
1TP1HE, 1TP1JE (Ch. RC-1199B, D)



MODEL 1TP1E

RCA VICTOR MODELS
1RH10, 1RH11, 1RH12, 1RH13, 1TP1E,
1TP1HE, 1TP1JE (Ch. RC-1199B, D)

TRADE NAME	RCA Victor Models	1-RH-10, 1-RH-11, 1-RH-12, 1-RH-13 (Ch. RC-1199D) 1-TP-1E, 1-TP-1HE, 1-TP-1JE Early Versions (Ch. RC-1199B) 1-TP-1E, 1-TP-1HE, 1-TP-1JE Late Versions (Ch. RC-1199D)
MANUFACTURER	RCA Victor Radio & "Victrola" Div., Radio Corp. of America, Camden 8, N. J.	
TYPE SET	Battery Operated Transistorized Portable AM Receiver	
POWER SUPPLY	4 Volts DC	RATING 12MA @ 4 Volts DC (No Signal, Min. Volume) 20MA @ 4 Volts DC (Signal, Normal Volume)
TUNING RANGE	540 – 1600KC	

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:
A1, A2, A3..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532
A4, A6..... GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291
WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538
A5..... GENERAL CEMENT #8607, 9291, 9294,
WALSCO #2520, 2522, 2523, 2524, 2534, 2537

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .05mfd to Base of Converter. Low side to B-.	455KC (400% Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3	Adjust for maximum output.
2.	Fashion loop of several turns of wire and radiate signal into loop of receiver.	1600KC	1600KC	"	A4	"
3.	"	600KC	600KC	"	A5	"
4.	"	1400KC	1400KC Signal.	"	A6	Adjust for maximum output. Repeat Steps 2, 3 and 4.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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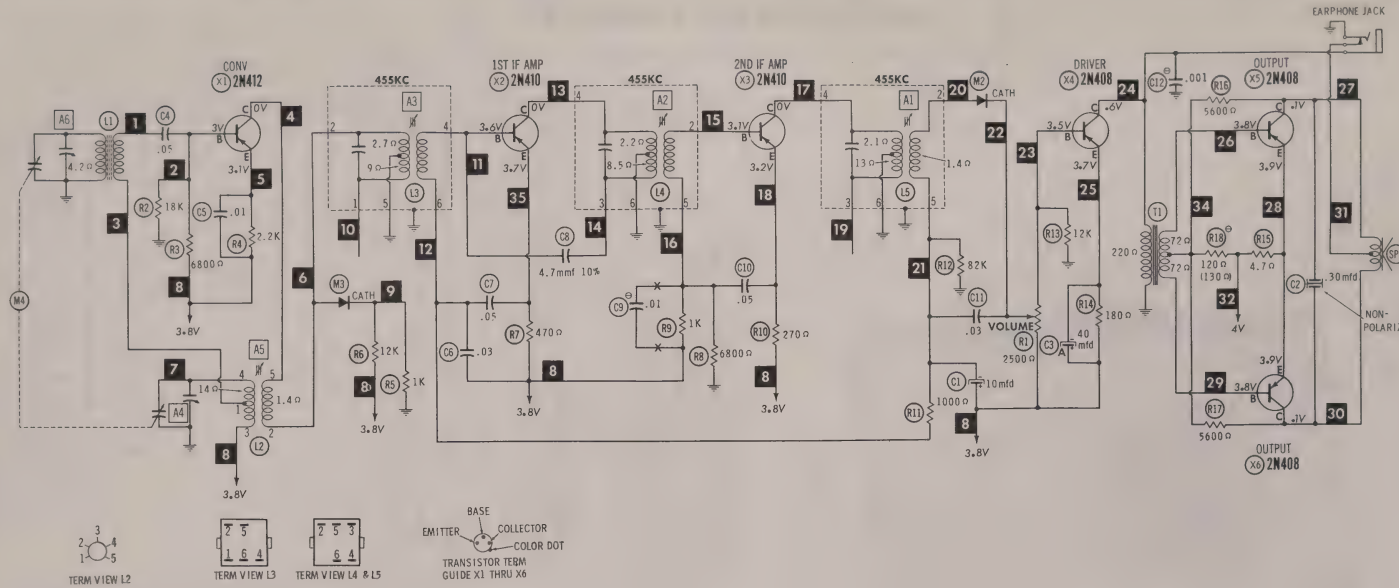
KF763

SET 551 FOLDER 9



RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

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RCA VICTOR MODELS
1RH10, 1RH11, 1RH12, 1RH13, 1TP1E, 1TP1HE, 1TP1JE (Ch. RC-1199B, D)

PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA		NOTES
			RCA PART No.	RAYTHEON PART No.	
X1	2N412	Converter	2N412	2N486	PNP
X2	2N410	1st IF Amplifier	2N410	2N483	PNP
X3	2N410	2nd IF Amplifier	2N410	2N483	PNP
X4	2N408	Driver	2N408	2N362	PNP
X5	2N408	Output	2N408	2N633	PNP
X6	2N408	Output	2N408	2N633	PNP

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	RCA Victor PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	10	4	108872	BCD6010	NLW10-6	PET1340	MLV10-6	TE-1087	
C2	.30	15NP	108885						
C3A	40	4	108873						
B	60	4							

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA						
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.	
C4	.05		C80V503AM	DA-503	H-05S5		TA-150	TG-S50	
C5	.01		C80V103AM	DM-103	H-05S1		TA-110	TG-S10	
C6	.03	#108168							
C7	.05		C80V503AM	DA-503	H-05S5		TA-150	TG-S50	
C8	4.7 10%		NPO-DI 4.7	TCZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47	
C9	.01	Note 1	C80V103AM	DM-103	H-05S1		TA-110	TG-S10	
C10	.05		C80V503AM	DA-503	H-05S5		TA-150	TG-S50	
C11	.03	#108168							
C12	.001	Note 2	C80V102AM	DM-102	H-05D1	CCD-102	B-210	TG-D10	
C13	.05		C80V503AM	DA-503	H-05S5		TA-150	TG-S50	

Note 1. Not used in some versions.
Note 2. Chassis RC-1199D use .004mfd in this application.
RCA Victor Part Number.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	RCA Victor PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	2500Ω	1/4	108879					Volume & Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	18K				R11	1000Ω			
R3	6800Ω				R12	82K			
R4	2200Ω				R13	12K			
R5	1000Ω				R14	180Ω			
R6	12K				R15	4.7Ω			
R7	470Ω				R16	5600Ω			
R8	6800Ω				R17	5600Ω			
R9	1000Ω				R18	120Ω			
R10	270Ω				R19	47Ω			(130Ω) *

* Used in Chassis RC-1199D.

PRINTED BOARD

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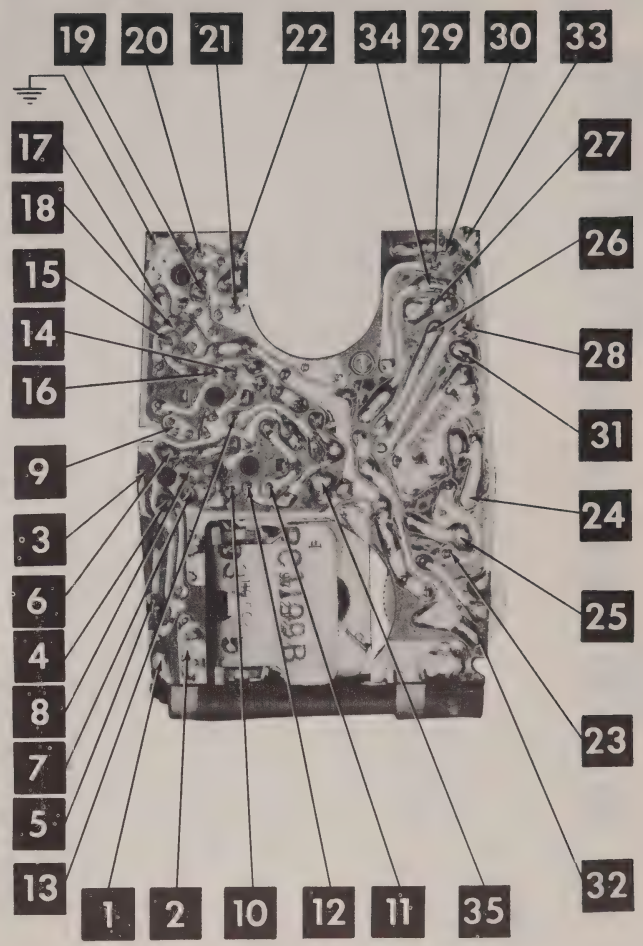


RCA VICTOR MODELS
1RH10, 1RH11, 1RH12, 1RH13, 1TP1E,
1TP1HE, 1TP1JE (Ch. RC-1199B, D)

FOLDER 9

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		RCA Victor PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	Loopstick	110070					
L2	Osc.	110069					
L3	1st IF	108881					
L4	2nd IF	108882					
L5	3rd IF	108883					

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	RCA Victor PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1.8	1	108884					

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	RCA Victor PART No.	QUAM PART No.	
SP1	2"	PM	90-110Ω	108920		

BATTERIES

ITEM No.	VOLTAGE	RCA Victor PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	4V	VS-149		H 133		E 133		TR-133	

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		RCA Victor PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	
M2		101615		1N60	Detector (Pigtail)
M3		101615		1N60	Overload (Pigtail)

MISCELLANEOUS

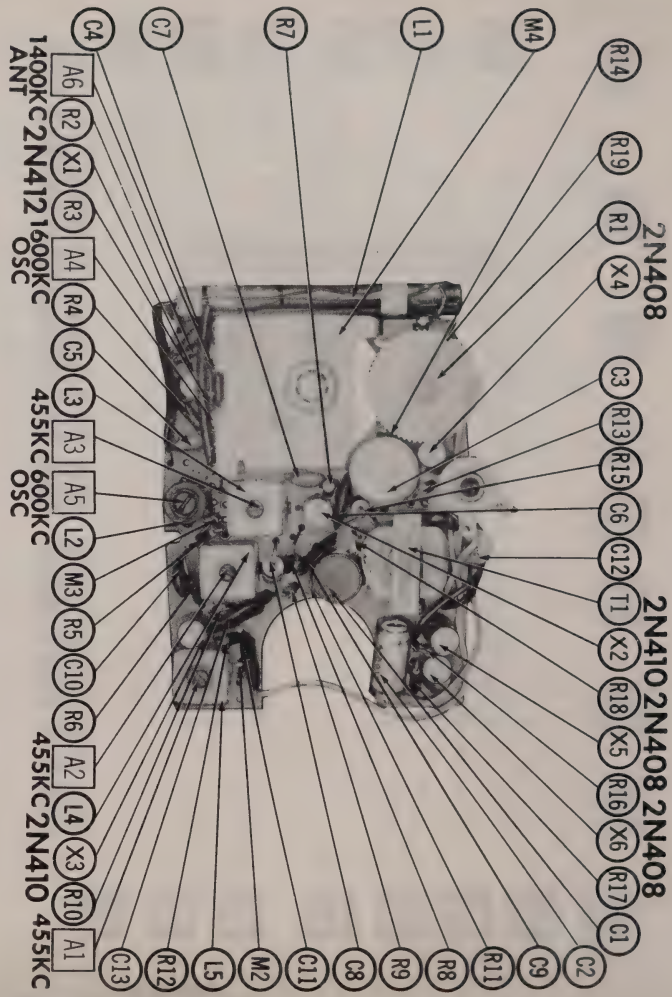
ITEM No.	PART NAME	RCA Victor PART No.	NOTES
M4	Tuning Cap.	108878	2 Gang
	Printed Board	110100	Less Antenna, Tuning Gang, Volume Control, Earphone Jack & Transistors
	Earphone	RK-272B	Model 1-RH Series
	Earphone	RK-219A	Model 1-TP Series

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Dial	110303	Models 1-RH Series
Dial	108887	Models 1-TP-1E, 1-TP-1JE
Dial	108886	Model 1-TP-1HE
Knob	110302	Tuning, Models 1-RH Series
Knob	108892	Tuning, Models 1-TP Series
Knob	108891	Volume, Champagne White, Models 1-RH Series, 1-TP-1E
Knob	108890	Volume, Burmuda Turquoise, Model 1-TP-1HE
Knob	108889	Volume, Charcoal, Model 1-TP-1JE
Cabinet	Y7158	Black Pearl/Gull Gray, Model 1-RH-11
Cabinet	Y7159	Academy Blue/Light Blue, Model 1-RH-12
Cabinet	Y7160	Regimental Red/White Opal, Model 1-RH-13
Cabinet	Y7101	Champagne White, Model 1-TP-1E
Cabinet	Y7103	Burmuda Turquoise/Champagne White, Model 1-TP-1HE
Cabinet	Y7102	Charcoal/Champagne White, Model 1-TP-1JE

CHASSIS—TOP VIEW



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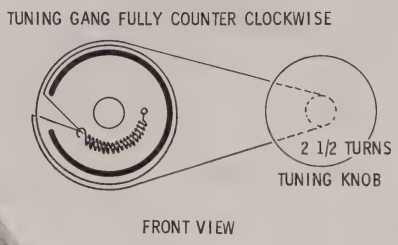
**CHANNEL MASTER
MODELS 6508, 6509**

CHANNEL MASTER
MODELS 6508, 6509

MODEL 6509

TUNING DRIVE CORD STRINGING



CHANNEL MASTER
MODELS 6508, 6509

TRADE NAME	Channel Master 6508, 6509
SUPPLIER	Channel Master Corp., Ellenville, N. Y.
TYPE SET	Battery Operated Transistorized Portable AM Receiver
POWER SUPPLY	9 Volts DC
RATING	9MA@9 Volts DC (No Signal, Min. Volume)
TUNING RANGE—BROADCAST	540 — 1600KC
	15MA@9 Volts DC (Signal, Normal Volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A4, A5....GENERAL CEMENT #5000, 5003, 5066, 8271, 8272, 8276, 8277, 8290, 8609, 8722, 9150, 9298

WALSCO #2515, 2516, 2518, 2519, 2525, 2541

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Loop	455KC (400~ Mod.)	1600KC	Across voice coil.	A1, A2, A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.	"	1400KC	1400KC Signal.	"	A4, A5	"
3.	"	600KC	600KC	"	A6, A7	Adjust for maximum output. Repeat Steps 2 and 3.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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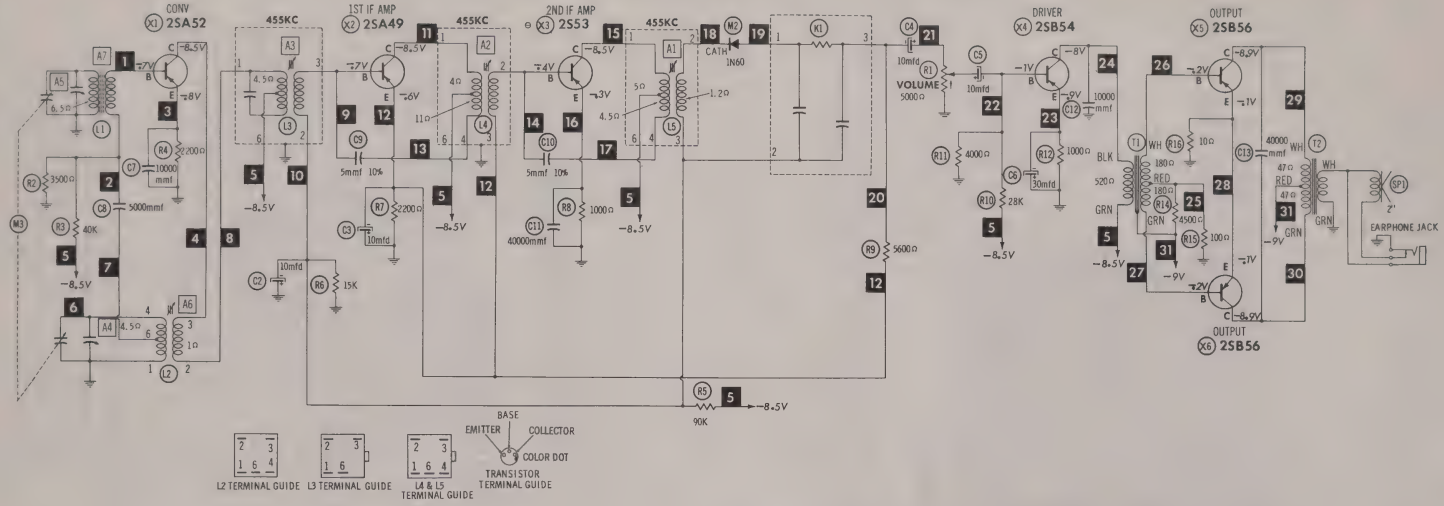
KF393

SET 525 FOLDER 4



1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

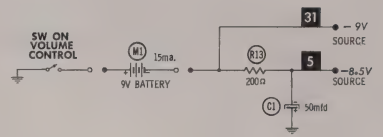
RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.



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CHANNEL MASTER
MODELS 6508, 6509

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2SA52	Converter				PNP
X2	2SA49	1st IF Amplifier				PNP
X3	2S53 *	2nd IF Amplifier				PNP
X4	2SB54	Driver	2N406			PNP
X5	2SB56	Output	2N408			PNP
X6	2SB56	Output	2N408			PNP

* Alternate Type 2SA53

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	Channel Master PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1	50	9	A031						
C2	10	3	A038		NLW10-3	TT3X10			
C3	10	3	A038		NLW10-3	TT3X10			
C4	10	3	A038		NLW10-3	TT3X10			
C5	10	3	A038		NLW10-3	TT3X10			
C6	30	3	A046		NLW30-6				

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C7	10000		C80V103AM		H-05S1		TA-110	TG-S10
C8	5000		C80V502AM		H-05D5		TA-250	TG-D50
C9	5 10%		NPO-DI 5	DTZ-4R7	C10V5C	CCTO-050	CNO-547	10TS-V50
C10	5 10%		NPO-DI 5	DTZ-4R7	C10V5C	CCTO-050	CNO-547	10TS-V50
C11	40000	#A043						
C12	10000		C80V103AM		H-05S1		TA-110	TG-S10
C13	40000	#A043						

\# Channel Master Part Number.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Channel Master PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	5000Ω	1/10	E022					Volume & Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	3500Ω				R10	28K			
R3	40K				R11	4000Ω			
R4	2200Ω				R12	1000Ω			
R5	90K				R13	200Ω			
R6	15K				R14	4500Ω			
R7	2200Ω				R15	100Ω			
R8	1000Ω				R16	10Ω			
R9	5600Ω								

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	Channel Master PART No.	REPLACEMENT DATA
K1	Diode RF Filter		A047	

PRINTED BOARD

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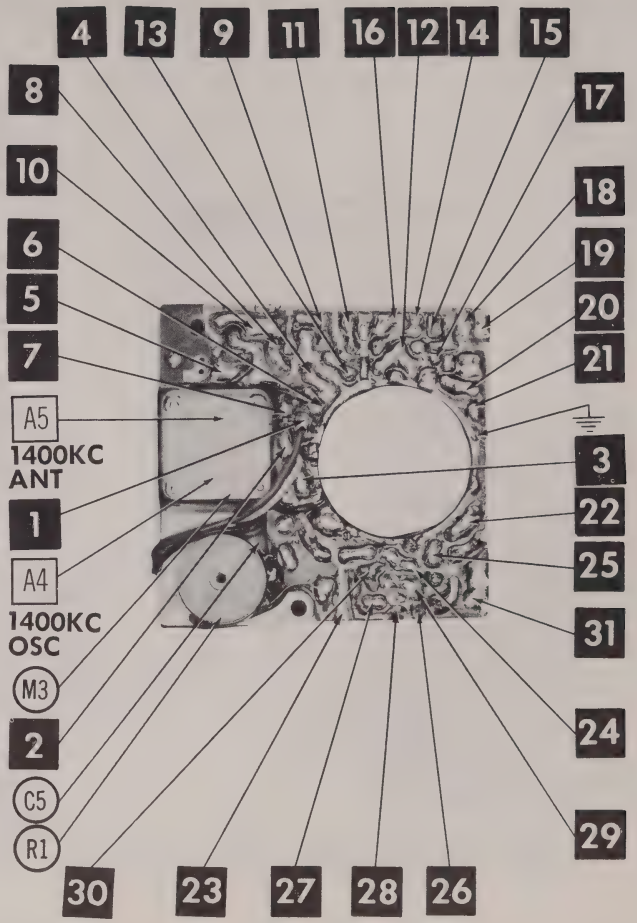


PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		Channel Master PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	
L1	Loopstick	E023				
L2	Osc.	F186				
L3	1st IF	C028				
L4	2nd IF	C029				
L5	3rd IF	C030				

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	Channel Master PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1.5	1	C026					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	Channel Master PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	320Ω CT	6-8Ω	C027					

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	Channel Master PART No.	QUAM PART No.	
SP1	2"	PM	6-8Ω	G094		

BATTERIES

ITEM No.	VOLTAGE	Channel Master PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	9V			2U6		216		M-1604	

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		Channel Master PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	1N60	F174		1N60	1N60	Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	Channel Master PART No.	NOTES
M3	Tuning Cap. Earphone	A044 E002	2 Gang

CABINETS & CABINET PARTS

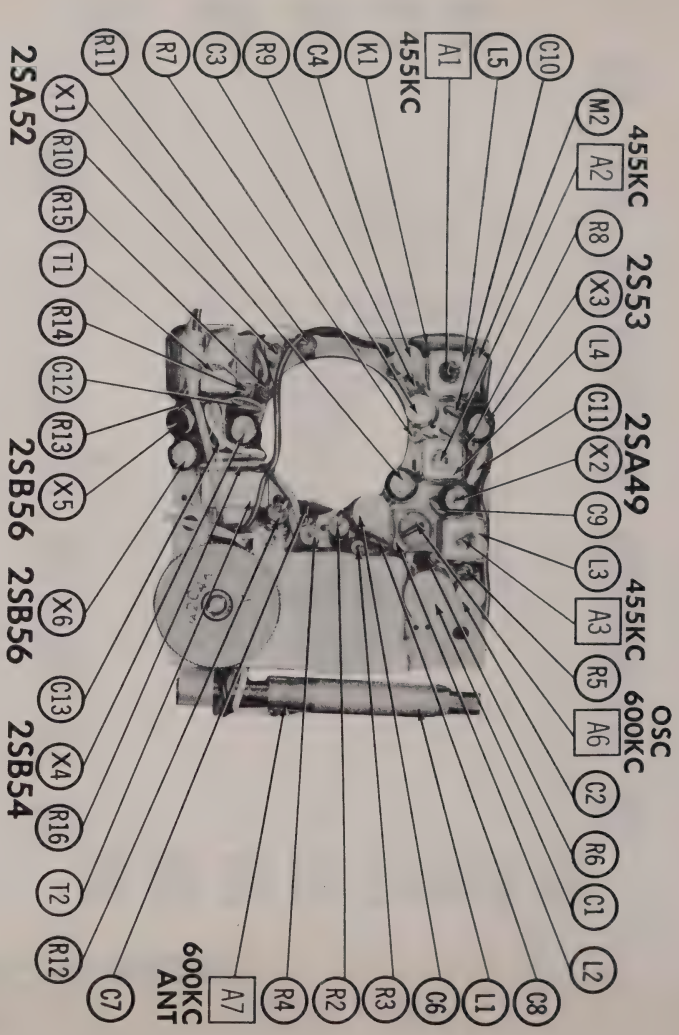
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	F021	Tuning
Knob	F022	Volume
Cabinet	G013	Black
Cabinet	G014	Red
Case	F071	Leather, Radio

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—TOP VIEW



PHOTOFACT® Folder with CIRCUITRACE®

CITI-FONE MODELS CD-5/6, CD-5/12

CITI-FONE MODELS
CD-5/6, CD-5/12

MODEL CD-5 12

NOTICE

ONLY THOSE PERSONS PROPERLY LICENSED BY FCC ARE PERMITTED TO EFFECT REPAIRS OR MAKE CRYSTAL SUBSTITUTION ON THE TRANSMITTER PORTION OF THIS UNIT.

TRADE NAME	Citi-Fone Models CD 5/6, CD 5/12
MANUFACTURER	Multi-Products Co., 21470 Coolidge Highway, Oak Park 37, Michigan
TYPE SET	AC-Battery Operated 9 Tube Citizens Band Transmitter-Receiver
POWER SUPPLY	110-120 Volts AC (or) 6 Volt Storage Battery (or) 12 Volt Storage Battery
RATING	35 Watts, .36 Amp. @117 Volts AC (or) 3 Amp. @12.6Volts DC (or) 6 Amp. @6.3Volts DC (Receive)
TUNING RANGE	Any 5 of Citizens Band Channels 1 Thru 22

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Set Squelch Control fully counterclockwise.
Set Gain Control fully clockwise.
Suggested Alignment Tools: A1 Thru A8... GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545
A9, A10..... GENERAL CEMENT #8721, 8722
WALSCO #2519

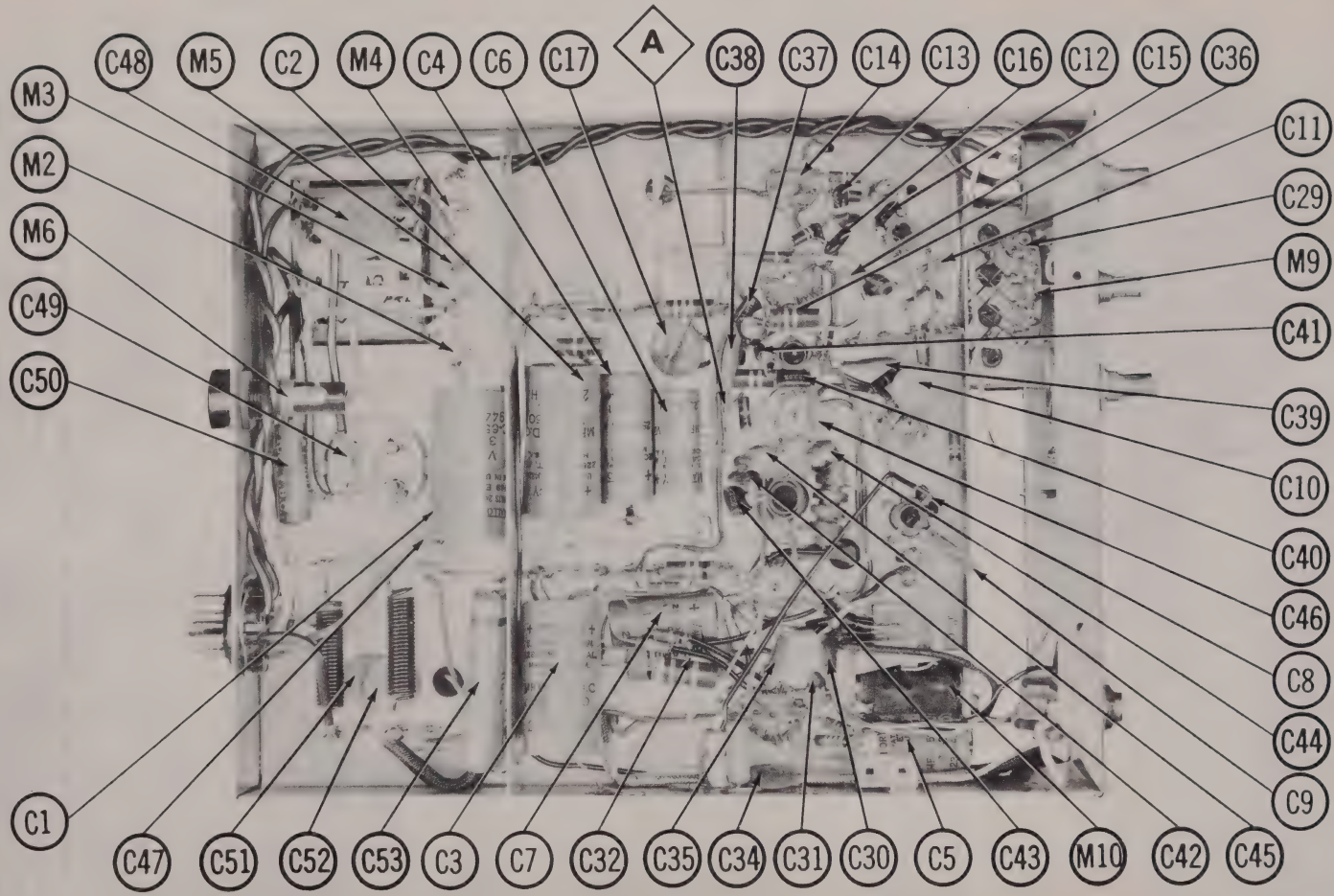
	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	OUTPUT METER	ADJUST	REMARKS
1.	High side to ungrounded tube shield floating over Mixer. Low side to chassis.	455KC (400~ Mod.)	Across voice coil.	A1, A2, A3, A4, A5, A6	Adjust for maximum deflection.
2.	High side to antenna jack. Low side to chassis.	Frequency of channel in use.	"	A7, A8	"
3.			USE VTVM AC probe to point Ⓐ. Common to chassis.	A9	Press "Talk" button. Adjust for maximum deflection.
4.			Use Field strength meter or RF Output Indicator.	A10	Connect 27MC antenna (or 50-75Ω load) to antenna terminals and press "Talk" button. Adjust A10 for maximum deflection.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

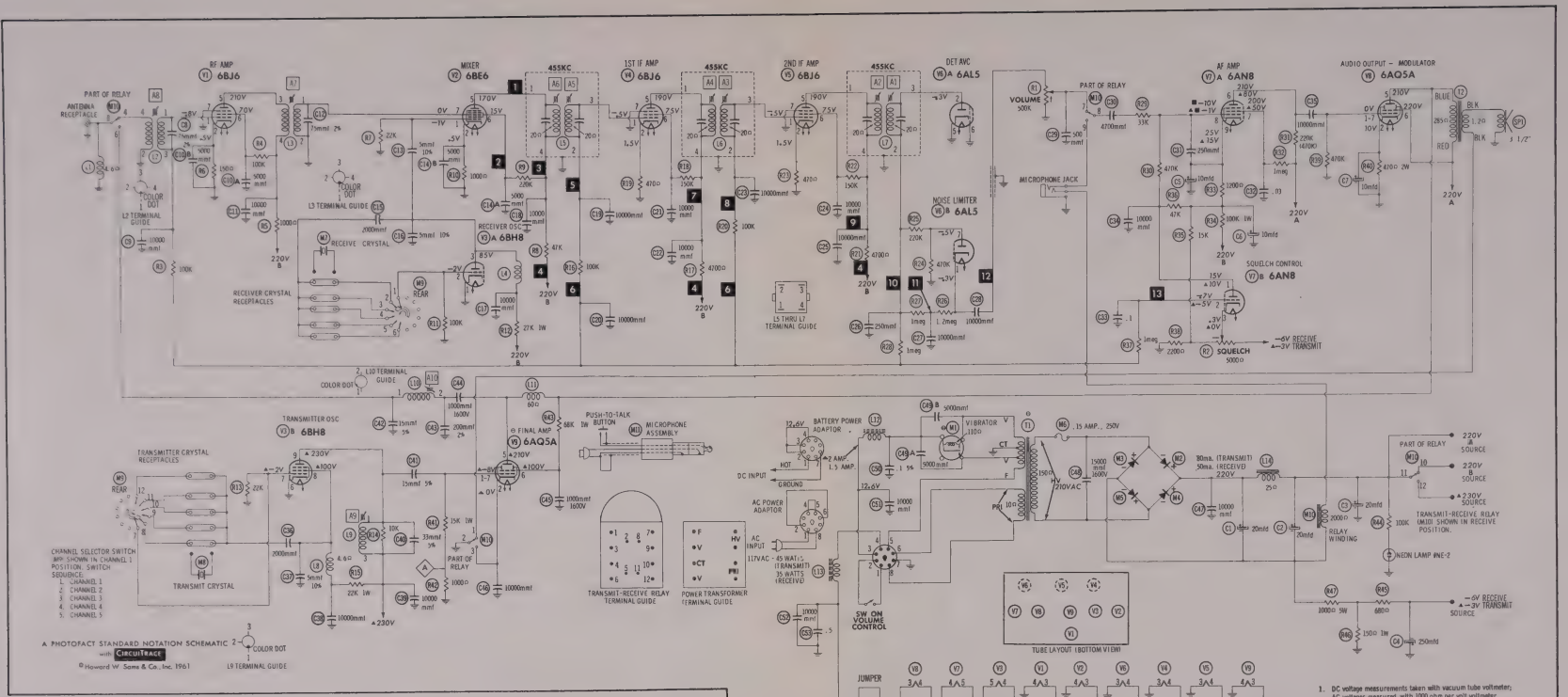
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

KZ353

SET 525 FOLDER 5



CHASSIS BOTTOM VIEW-CAPACITOR & MISC. IDENT.


RF AMP V1 6BJ6
MIXER V2 6BE6
455KC
1ST IF AMP V4 6BJ6
2ND IF AMP V5 6BJ6
DET AVC V6 A 6AL5
NOISE LIMITER V6 B 6AL5
AF AMP V7 A 6AN8
SQUELCH CONTROL V7 B 6AN8
AUDIO OUTPUT – MODULATOR V8 6AQ5A
RECEIVER OSC V3 A 6BH8
TRANSMITTER OSC V3 B 6BH8
FINAL AMP V9 6AQ5A
PART OF RELAY
ANTENNA RECEPTACLE
VOLUME
MICROPHONE JACK
RECEIVE CRYSTAL
RECEIVER CRYSTAL RECEPTACLES
TRANSMITTER CRYSTAL RECEPTACLES
TRANSMIT CRYSTAL
PUSH-TO-TALK BUTTON
MICROPHONE ASSEMBLY
BATTERY POWER ADAPTOR
DC INPUT
AC POWER ADAPTOR
AC INPUT
VIBRATOR
RELAY WINDING
NEON LAMP #NE-2
SW. ON VOLUME CONTROL
TRANSMIT-RECEIVE RELAY TERMINAL GUIDE
POWER TRANSFORMER TERMINAL GUIDE
L5 THRU L7 TERMINAL GUIDE
L9 TERMINAL GUIDE
L10 TERMINAL GUIDE
COLOR DOT
CHANNEL SELECTOR SWITCH APP. SHOWN IN CHANNEL 1 POSITION. SWITCH SEQUENCE: 1. CHANNEL 1 2. CHANNEL 2 3. CHANNEL 3 4. CHANNEL 4 5. CHANNEL 5
A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE
©Howard W. Sams & Co., Inc. 1961
TUBE LAYOUT (BOTTOM VIEW)
JUMPER
NOTE: FILAMENTS SHOWN FOR 12VDC. FOR 6V OPERATION, REPLACE T1 AND ML-1 (SEE PARTS LIST). CONNECT JUMPER FROM A TO B AND GROUND C. †TERMINALS LOCATED ON CHASSIS BOTTOM, REAR).

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±1% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BJ6	1.8meg	150Ω	.1Ω	0Ω	↑1000Ω	↑100K	0Ω		
V2	6BE6	22K	1000Ω	.1Ω	0Ω	↑47K	↑220K	.2Ω		
V3	6BH8	0Ω	100K	↑27K	.1Ω	.1Ω	0Ω	22K	↑22K	▲↑25Ω
V4	6BJ6	1.8meg	470Ω	0Ω	.1Ω	↑4700Ω	↑155K	0Ω		
V5	6BJ6	1.8meg	470Ω	0Ω	.1Ω	↑4700Ω	↑155K	0Ω		
V6	6AL5	3meg	700K	0Ω	.1Ω	0Ω	0Ω	470K		
V7	6AN8	65K	2.7meg	2000Ω	.1Ω	.1Ω	↑220K	↑1meg	535K	18K
V8	6AQ5A	470K	470Ω	.1Ω	.1Ω	↑310Ω	↑25Ω	NC		
V9	6AQ5A	16K	1KΩ	.1Ω	0Ω	↑370Ω	↑68K	16K		

ALL MEASUREMENTS MADE IN "RECEIVE" POSITION WITH RECEIVER JUST SQUELCHED AND DUMMY LOAD CONNECTED UNLESS OTHERWISE DESIGNATED.
▲ MEASURED IN "TRANSMIT" POSITION.
↑ MEASURED FROM OUTPUT OF M2 AND M4.
■ MEASURED FROM CATHODE
NC NO CONNECTION

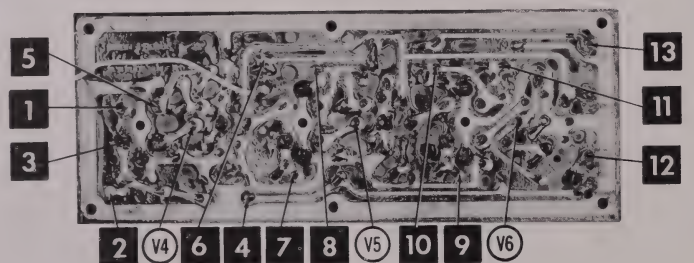
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

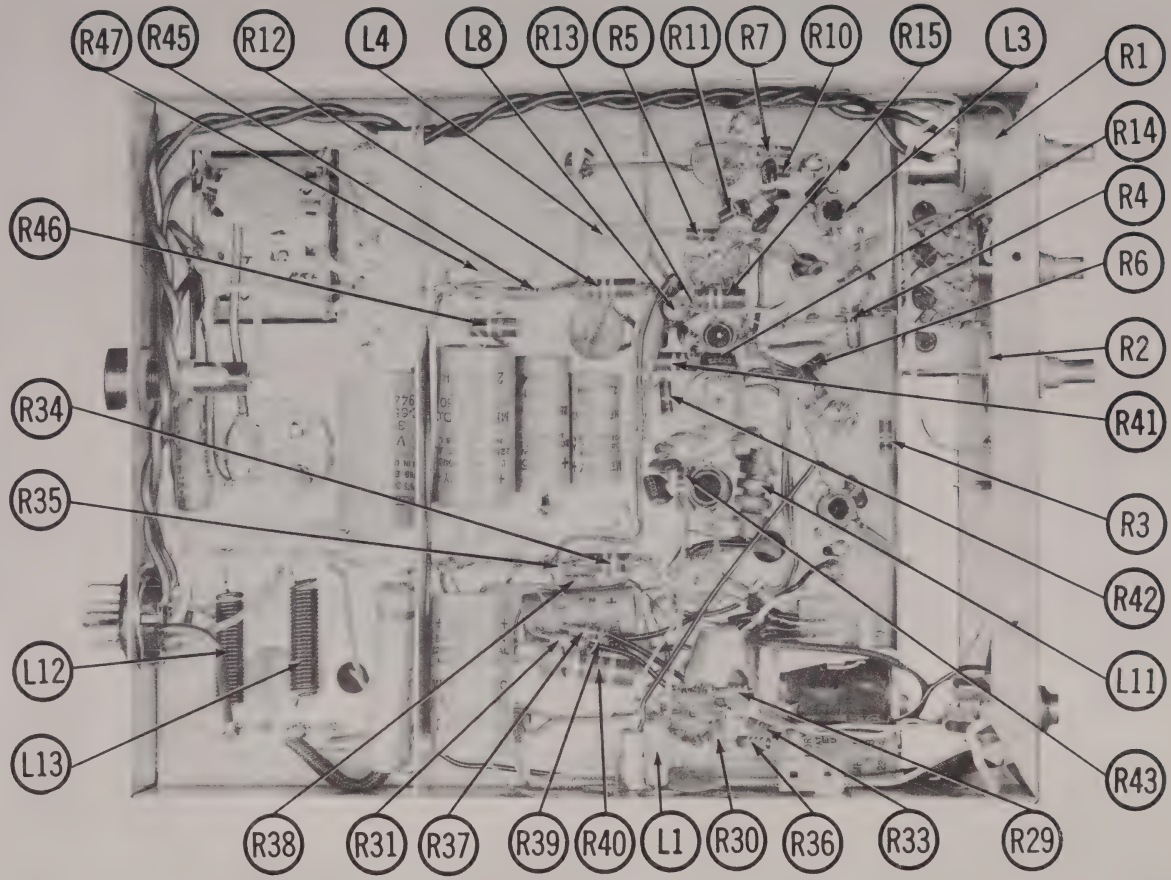
CITI-FONE MODELS CD-5/6, CD-5/12



A Howard W. Sams CIRCUITRACE Photo

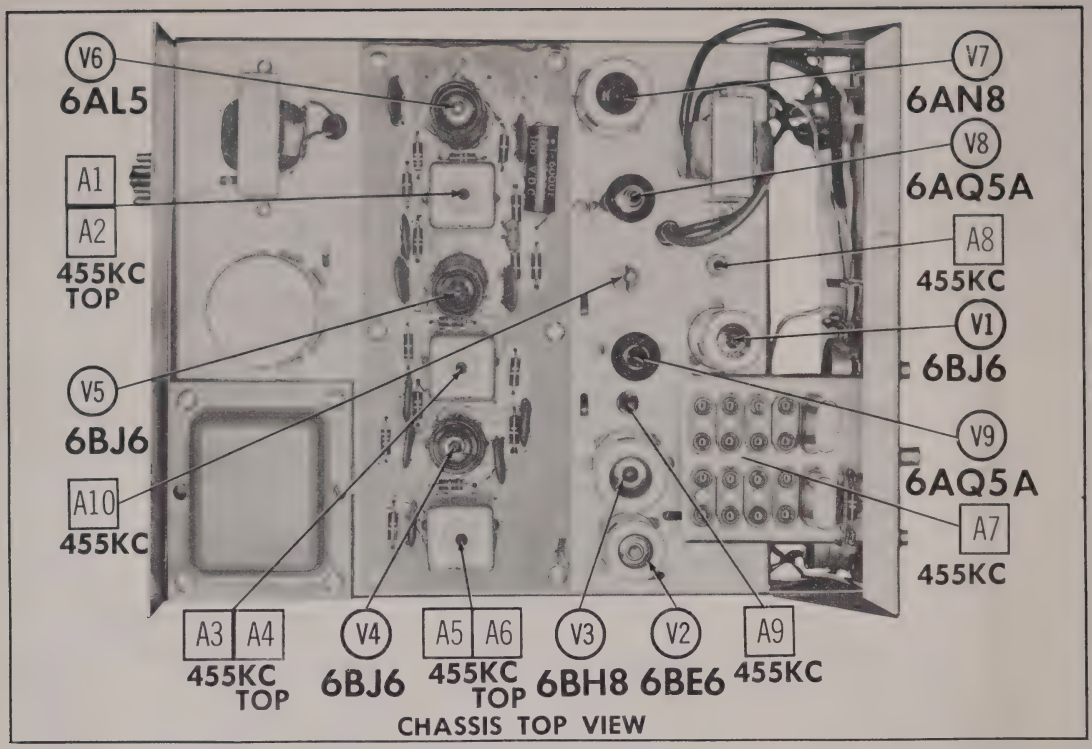
PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

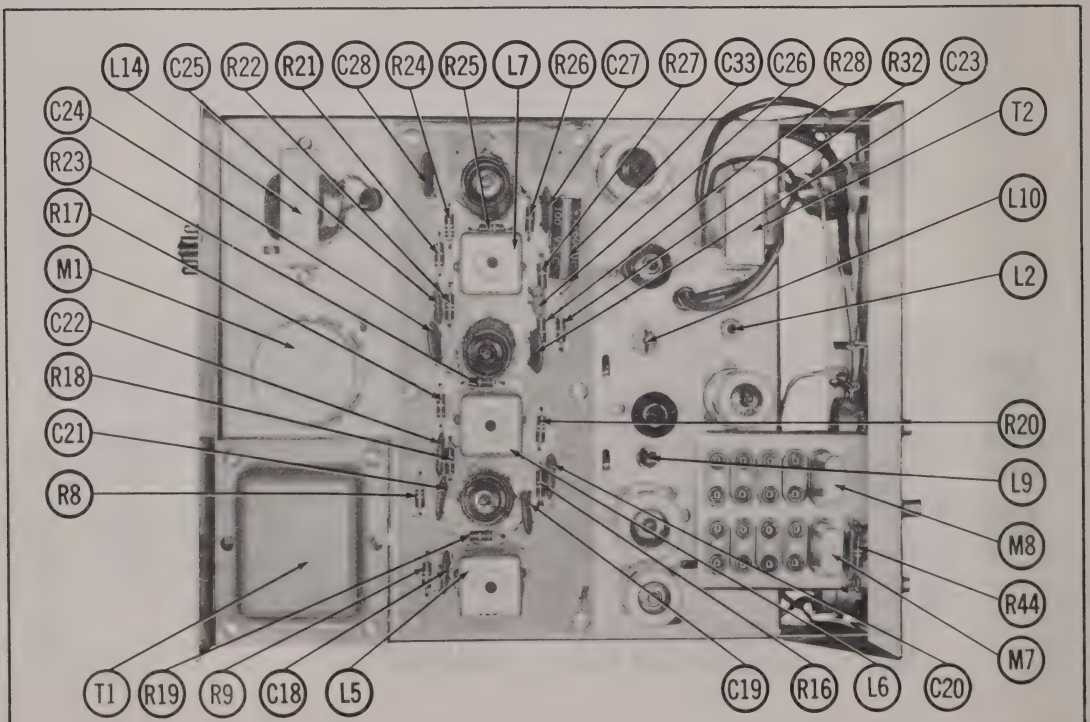


CHASSIS BOTTOM VIEW-RESISTOR & INDUCTOR IDENT.

CITT-FONE MODELS
CD-5/6, CD-5/12



CHASSIS TOP VIEW



CHASSIS TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (GENERAL ELECTRIC • RAYTHEON • SYLVANIA)
V1	RF Amplifier	6BJ6
V2	Mixer	6BE6
V3	Rec. Osc. -Trans. Osc.	6BH8
V4	1st IF Amplifier	6BJ6
V5	2nd IF Amplifier	6BJ6
V6	Det. -AVC-Noise Limiter	6AL5
V7	AF Amp. -Squelch Control	6AN8
V8	Audio Output & Modulator	6AQ5A
V9	Final Amplifier	6AQ5A *

* Manufacturer Recommends Replacing with Original Brand Only (Tung Sol)

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA CITI-FONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1	20	350		PRS1735	BR2035	TC65	TD-20-350	TVA-1608	
C2	20	350		PRS1735	BR2035	TC65	TD-20-350	TVA-1608	
C3	20	350		PRS1735	BR2035	TC65	TD-20-350	TVA-1608	
C4	250	6		PRS1110	BBR250-6	TC50025	TD-250-6	TVA-1102	
C5	10	50		PRS1320	BBR10-50	TC32	TD-10-50	TVA-1304	
C6	10	50		PRS1320	BBR10-50	TC32	TD-10-50	TVA-1304	
C7	10	50		PRS1320	BBR10-50	TC32	TD-10-50	TVA-1304	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C8	75 2%			TCZ-75		CM-15E-750G	MCE230	
C9	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C10A	5000	)	BPD-2X005	DD3-502	BYD6DD5	CCD-502)	B2X250	5HK-2D50
B	5000	)				CCD-502)		
C11	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C12	75 2%			TCZ-75		CM-15E-750G	MCE230	
C13	5 10%		1469-000005	TCZ-4R7	22R5V5	CM-19B-050K	MCB205	MS-55
C14A	5000	)	BPD-2X005	DD3-502	BYD6DD5	CCD-502)	B2X250	5HK-2D50
B	5000	)				CCD-502)		
C15	2000		BPD-002	DD-202	BYA10D2	CCD-220	B-220	5HK-D20
C16	5 10%		1469-000005	TCZ-4R7	22R5V5	CM-19B-050K	MCB205	MS-55
C17	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C18	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C19	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C20	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C21	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C22	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C23	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C24	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C25	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C26	250		SI 250	D6-251	L10T25	CCD-251	GP325	10TS-T25
C27	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C28	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C29	500		SI 500	D6-501	BYA10T5	CCD-501	B-350	10TS-T50
C30	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C31	250		SI 250	D6-251	L10T25	CCD-251	GP325	10TS-T25
C32	.03 400V		P488N-03	DD-303	CUB6S3	4DP-2-303	GEM-413	4TM-S30
C33	.1 100V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C34	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C35	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C36	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C37	5 10%		1469-000005	TCZ-4R7	22R5V5	CM-19B-050K	MCB205	MS-55
C38	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C39	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C40	33 5%		1469-000033	TCZ-33	22R5Q33	CM-19B-330J	CNO-433	MS-433
C41	15 5%		1469-000015	TCZ-15	22R5Q15	CM-19B-150J	CNO-415	MS-415
C42	15 5%		1469-000015	TCZ-15	22R5Q15	CM-19B-150J	CNO-415	MS-415

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C43	200 2%		1469-0002			CM-15E-201G	MCE237	
C44	1000 1600V		DAC-2	DD30-102	HVB20D1	3CCD-102	2HV-210	BL-D10
C45	1000 1600V		DAC-2	DD30-102	HVB20D1	3CCD-102	2HV-210	BL-D10
C46	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C47	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C48	15000 1600V			DD16-153	HVE16S15	16DP-4-153		MB-S15
C49A	5000	)	BPD-2X005	DD3-502	BYD6DD5	CCD-502)	B2X250	5HK-2D50
B	5000	)				CCD-502)		
C50	.1 100V 5%		V84C2P1-5%		PM2P1	1DP-2-104		5BF-P10
C51	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C52	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C53	.5 120V		P282Z-5		CUB2P5	2DP-5-504	GEM-205	2TM-P50

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA CITI-FONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	½	475A	B-60-S	A47-500K-Z	Q13-133	U48	Volume
B	Shaft			Not Req.	RS-2	Not Req.	Not Req.	
C	Switch			Not Req.	SWE-12	76-1	US-26	Power Off-On
R2A	5000Ω	½		B-10	A47-5000-S	Q11-114	U14	Squelch
B	Shaft			Not Req.	RS-2	Not Req.	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R3	100K			
R4	100K			
R5	1000Ω			
R6	150Ω			
R7	22K			
R8	47K			
R9	220K			
R10	1000Ω			
R11	100K			
R12	27K 1W			
R13	22K			
R14	10K			
R15	22K 1W			
R16	100K			
R17	4700Ω			
R18	150K			
R19	470Ω			
R20	100K			
R21	4700Ω			
R22	150K			
R23	470Ω			
R24	470K			
R25	220K			

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R26	1.2meg			
R27	1meg			
R28	1meg			
R29	33K			
R30	470K			
R31	220K			(470K) *
R32	1meg			
R33	1200Ω			
R34	100K 1W			
R35	15K			
R36	47K			
R37	1meg			
R38	2200Ω			
R39	470K			
R40	470Ω 2W			
R41	15K 1W			
R42	1000Ω			
R43	68K 1W			
R44	100K			
R45	680Ω			
R46	150Ω 1W			
R47	1000Ω 5W	PW5-1000	5W-SQ-1000	

* Alternate Value.

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		CITI-FONE PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	
L1	RF Choke(7.5uh)	①	BC-565	4611	RTC-8521	① IRC Part #CLA
L2	Ant.	603				
L3	RF	602				
L4	RF Choke(7.5uh)	①	BC-565	4611	RTC-8521	
L5	1st IF	525				
L6	2nd IF	525				
L7	3rd IF	525				
L8	RF Choke(7.5uh)	①	BC-565	4611	RTC-8521	
L9	Trans. Osc. Plate	604	TV-118	6171-A	RTC-8609	
L10	Transmitter Output	G-15	TV-118	6171-A	RTC-8609	
L11	RF Choke(2.5MH)		BC-549	4537	RTC-9166	
L12	Hash Choke (10uh)			5220	RTC-9182	
L13	Fil. Choke (10uh)			5220	RTC-9182	

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ~)	CITI-FONE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
L14	.080A	25Ω	.5 HY	M88-628					

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	INPUT	SEC. 1	SEC. 2	CITI-FONE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	117VAC@ .46A or 12.6VDC @ 1.5A	210V @ .15A DC	18V Tap @ 12.6V, 6V *	592 ①					① For 12 VDC Operation. Part #591 used for 6 VDC operation. * Secondary 2 not used in DC operation.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	CITI-FONE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	6700Ω	3-4Ω	121-A6	A-3026	A-3850①	24S05①	S-49X①	① Drill New Mounting Hole(s).

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	CITI-FONE PART No.	QUAM PART No.	
SP1	3½"	PM	3-4Ω	5531	3A07	

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA				NOTES
				CITI-FONE PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	RADIART PART No.	
M1	Interrupter	12V	115~	G-1601	6301	G-1601	6301	
	Interrupter	6V	115~	1601	5300	1601	5300	

POWER RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	CITI-FONE PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M2	.080A		1N1763 *	2F4 *	SR200 *	* Silicon
M3	.080A		1N1763 *	2F4 *	SR200 *	
M4	.080A		1N1763 *	2F4 *	SR200 *	
M5	.080A		1N1763 *	2F4 *	SR200 *	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			CITI-FONE PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M6	3AG	15/100A 250V S/B			313.150 (.15A 250V S/B)	342001	MDL 15/100	HKP

MISCELLANEOUS

ITEM No.	PART NAME	CITI-FONE PART No.	NOTES
M7	Crystal		Receive
M8	Crystal		Transmit
M9	Switch		Channel Selector (Rotary Wafer Type)
M10	Relay		Transmit-Receive
M11	Microphone Assy.		Includes Push-To-Talk Switch

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT® Folder with CIRCUITRACE®

COLUMBIA MODEL
C695-TR

COLUMBIA MODEL
C695-TR

COLUMBIA MODEL
C695-TR

GENERAL INFORMATION

The Columbia Model C695-TR is a battery operated, single-speed, dual-track tape recorder.

Recordings can be made from a radio, phonograph, or television receiver as well as those made directly from the microphone.

The recording on a previously recorded tape is automatically erased before a new recording is made.

Using both tracks at 3 3/4 ips on a 3-inch reel, the recording and playback time is one-half hour.

The power supply is self-contained, consisting of 4 leak-proof, size "D", 1 1/2 volt batteries and 2 leak-proof, size "C", 1 1/2 volt batteries. Power may also be obtained from a 6-volt storage battery.

Supplied By:

Columbia Phonographs
Dept. of CBS Electronics
405 Park Avenue
New York 22, N. Y.

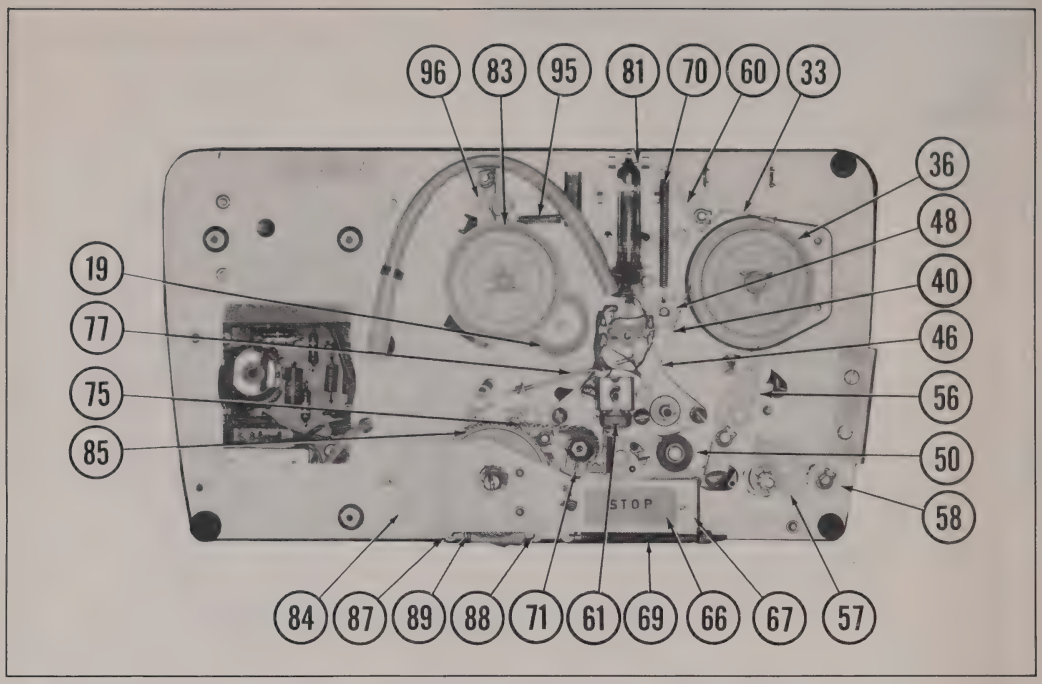
SET 525 FOLDER 6

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

CQ452

SET 525 FOLDER 6



TOP VIEW OF MECHANISM WITH DRESS PLATE REMOVED

PREPARING FOR OPERATION

1. Remove the lid from the case.
2. Remove all accessories from the storage compartment.
3. Remove the bottom panel of the case by unfastening the large slotted screw.
4. Insert the batteries into their holders according to the glued-in diagram which shows the direction of insertion.
5. Replace the bottom panel.

FUNCTION OF CONTROLS

Selector Switch

The Selector Switch has four functions. They are as follows:

1. The black dot is the "Off" position. When in this position, the power to the recorder is switched off.
2. When turned to the green circle, the recorder is in the playback position.
3. Depressing the Record Safety Button, located next to the speaker grill, and turning the Selector Switch to the red circle places the recorder in the record position.
4. Turning the Selector Switch completely to the left places the recorder in the Rewind position.

Temporary Stop

The Temporary Stop bar, labeled Stop on the recorder, permits the operator to stop the forward motion of the tape temporarily to cut out unwanted portions of a recording being made from a radio or TV program. To lock the Temporary Stop button down, depress and slide the button forward.

Recording Level Volume

The small knob on the right serves as a sensitivity control during a recording and as a volume control during playback.

Monitoring Tone

The large clamp knob on the right serves as a monitoring control during a recording and as a tone control during playback.

Threading The Tape

1. Place a reel of tape on the left-hand spindle.
2. Place an empty reel on the right-hand spindle.
3. Unwind about 10" of tape from the reel. Hold a section taut and insert it into the tape slot. Make sure the dull coated side faces the rear of the recorder.
4. Insert the free end of the tape into one of the radial slots in the hub of the empty reel. Turn the reel several turns counterclockwise to fasten the tape to the reel and to take all slack up between reels.

NOTE: Be sure the lugs of the reel holders are parallel to the ridges of the spindles before putting the reels on the spindle. After the reels are in place, turn the reel holders 90 degrees clockwise to secure the reels on the spindles.

Recording From Microphone

1. Insert the microphone plug into the "Input-Output socket.
2. Turn the monitoring control to its lowest position.
3. Depress and lock the Stop button.
4. Depress the Record Safety Button and turn the Selector Switch to record position.
5. Make a test recording and set the Sensitivity control so the illuminated line in the magic eye moves toward the point but does not touch it.
6. Release the Stop button and start the recording.

NOTE: Hold the microphone 8 to 12 inches from your mouth and speak in a normal voice.

Correct sensitivity level during a recording is very important. Too weak a signal will result in weak playback and high background noise. Too strong a signal will result in distortion during playback.

Recording From a Radio or Television Receiver

Connect the recorder to a radio or television receiver by means of one of the connecting leads, 247 or 259. Tune in the desired station and adjust the radio or television receiver volume and tone controls for best sound.

Follow steps 2 through 6 in "Recording From Microphone" to record the program.

To Record From a Phonograph

Lead 247 and adapter 292 are required to record from a phonograph.

Insert the adapter into the "Input-Output" jack and connect the lead to the phonograph and recorder. Follow the same procedure as described under "Recording From a Microphone".

Dual Track Recording

This recorder is designed to record and play on one-half the width of the tape at a time; thereby, resulting in two-track recording. After the first recording is completed, remove the full reel from the right hand spindle; turn the reel over and place it on the left-hand spindle. Then make another recording. The tape can be played back in the same manner.

Rewind

To rewind the tape at a rapid speed, turn the Selector Switch to the Rewind position.

To Play a Recording

1. Thread the tape as described under "Threading the Tape".
2. Turn the Selector Switch to the Play position.
3. Adjust the Volume control to the desired listening level.

To Erase a Recording

In record position, any recording on the tape is automatically erased before a new recording is made. Should it be desired to erase a recording without recording new material, follow the normal recording procedure but set the volume control to the full counterclockwise position.

6-Volt Car Battery Connection

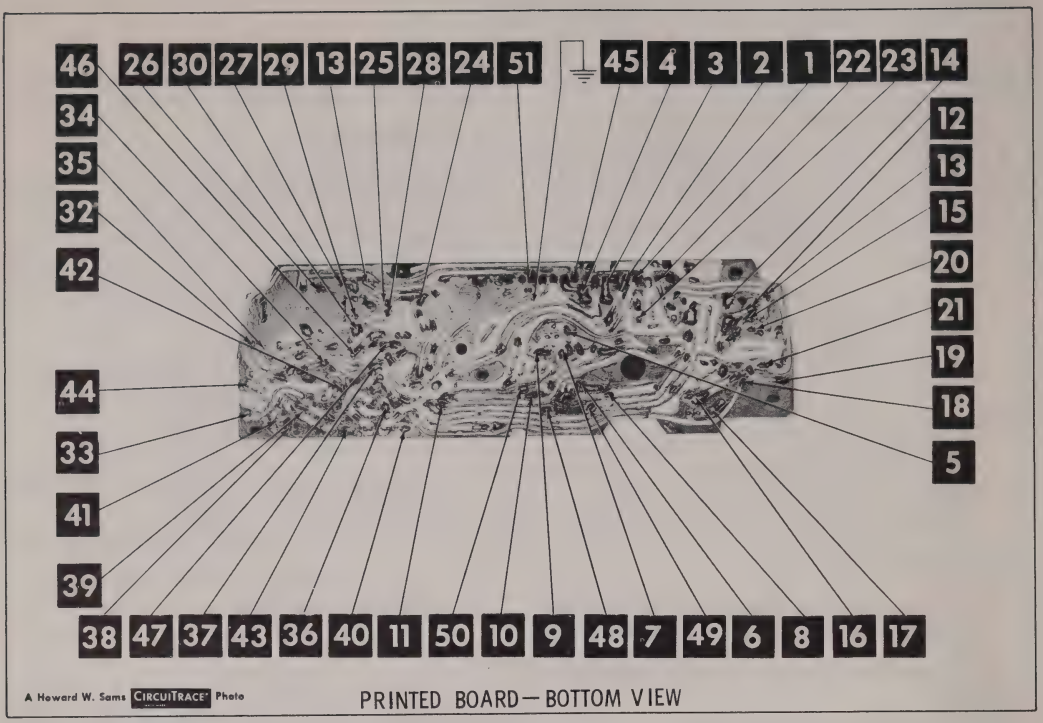
To operate this recorder from a 6-volt car battery, connect lead 256 from the 6-volt car battery socket on the recorder to the voltage source. When lead 256 is inserted in the 6-volt car battery socket, the motor drive batteries are automatically disconnected.

NOTE: The 6-volt car battery socket is located on the right side of the recorder toward the rear.

To Edit and Splice Tape

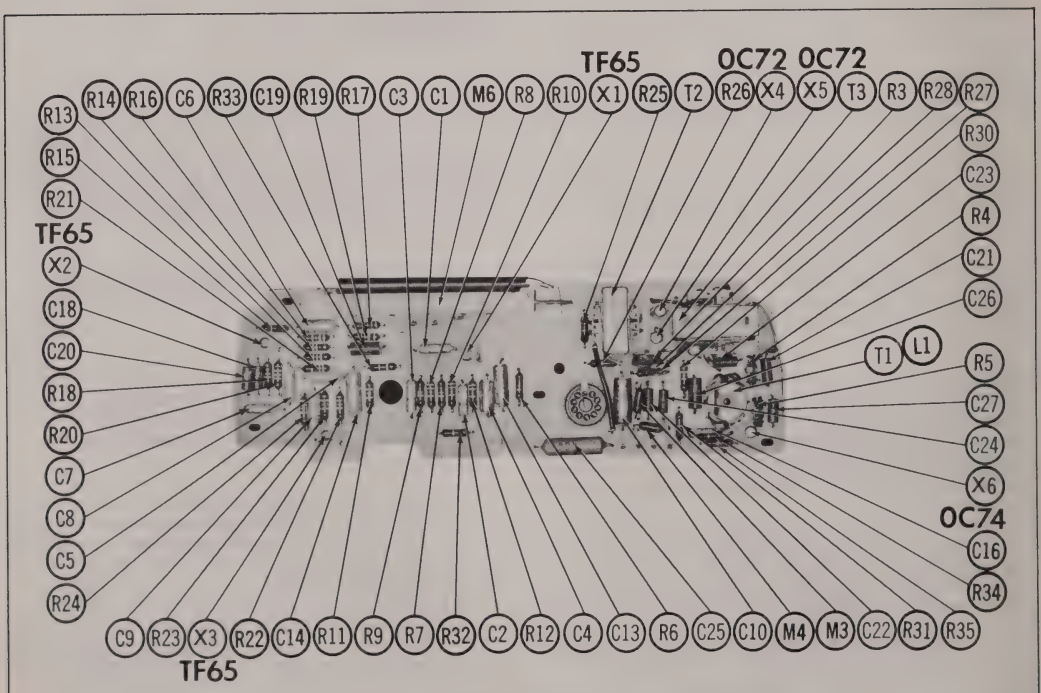
NOTE: It is impossible to edit and splice one track without affecting the other. Recordings to be edited should be limited to one track.

1. Tape may be edited by cutting out unwanted portions, or by joining selections into another sequence. Announcements can be inserted between selections, etc. Unused tape can be spliced for reuse.
2. For best results, cut tape at a slight diagonal, butt ends together and fasten on the glossy side with splicing tape. Trim off any excessive width.

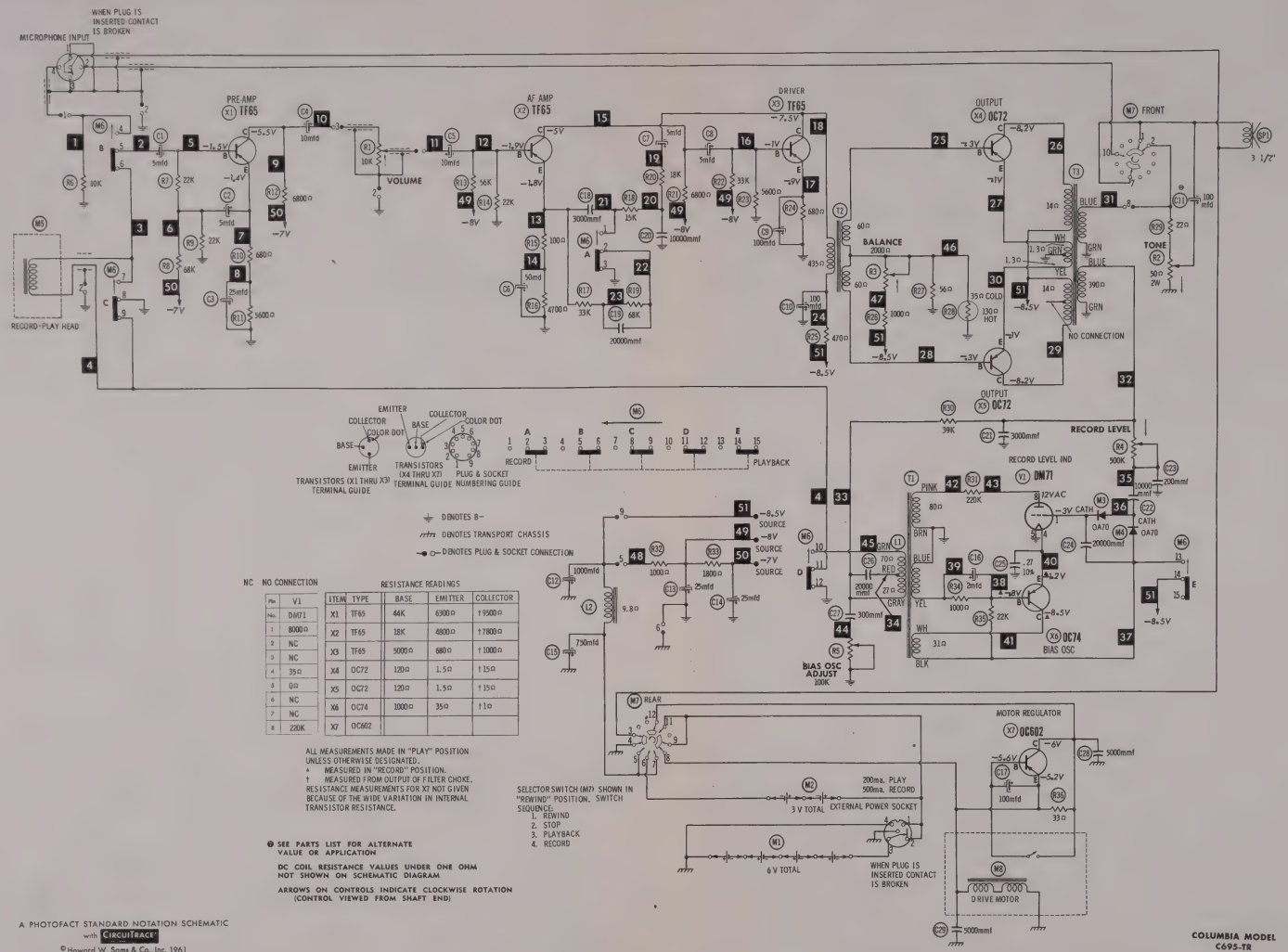


A Howard W. Sams CIRCUITRACE® Photo

PRINTED BOARD—BOTTOM VIEW



PRINTED BOARD—TOP VIEW



NC NO CONNECTION

Pin No.	V1
1	DM71
2	8000Ω
3	NC
4	NC
5	35Ω
6	0Ω
7	NC
8	NC
9	220K

RESISTANCE READINGS

ITEM	TYPE	BASE	EMITTER	COLLECTOR
X1	TF65	44K	6300Ω	↑9500Ω
X2	TF65	18K	4800Ω	↑7800Ω
X3	TF65	5000Ω	680Ω	↑1000Ω
X4	OC72	120Ω	1.5Ω	↑15Ω
X5	OC72	120Ω	1.5Ω	↑15Ω
X6	OC74	1000Ω	35Ω	↑1Ω
X7	OC602			

ALL MEASUREMENTS MADE IN "PLAY" POSITION UNLESS OTHERWISE DESIGNATED.
* MEASURED IN "RECORD" POSITION.
† MEASURED FROM OUTPUT OF FILTER CHOKE. RESISTANCE MEASUREMENTS FOR X7 NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE®

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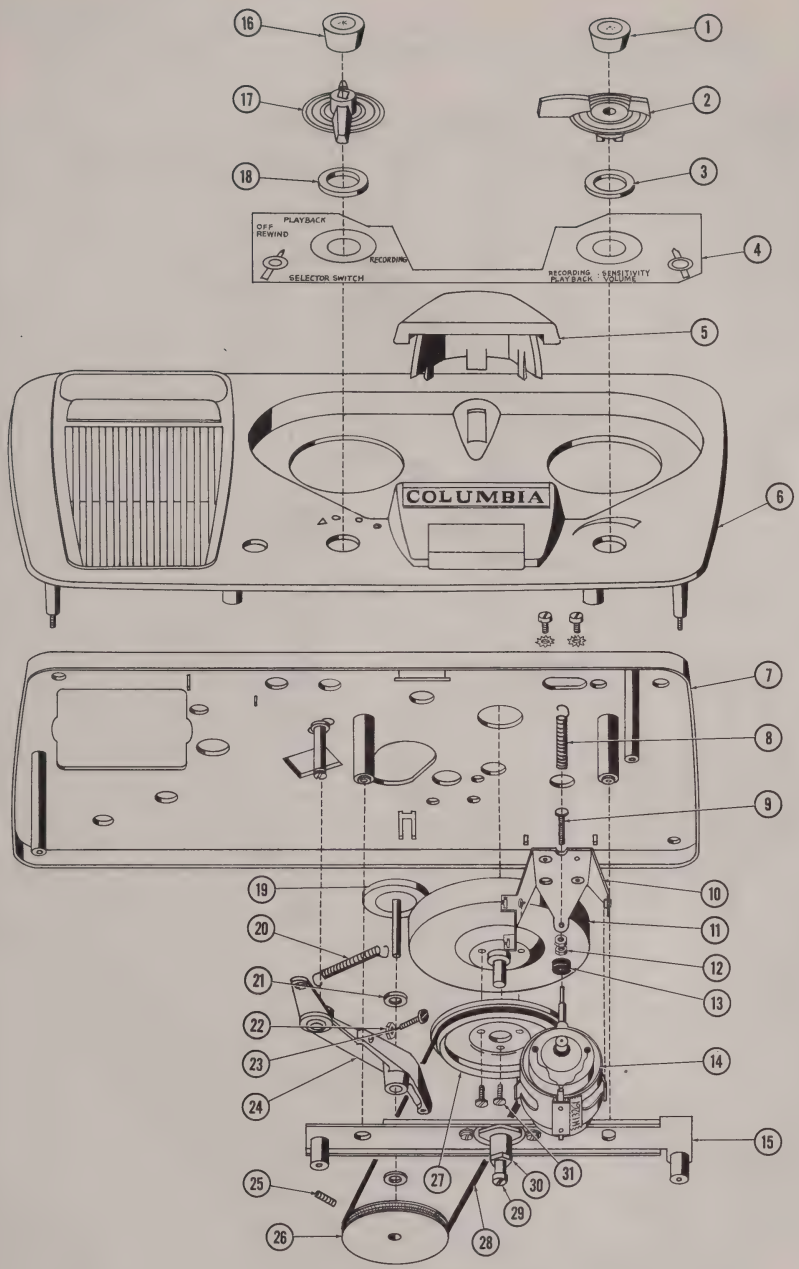
COLUMBIA MODEL C695-TR



A PHOTOFACT "EXPLODED" VIEW
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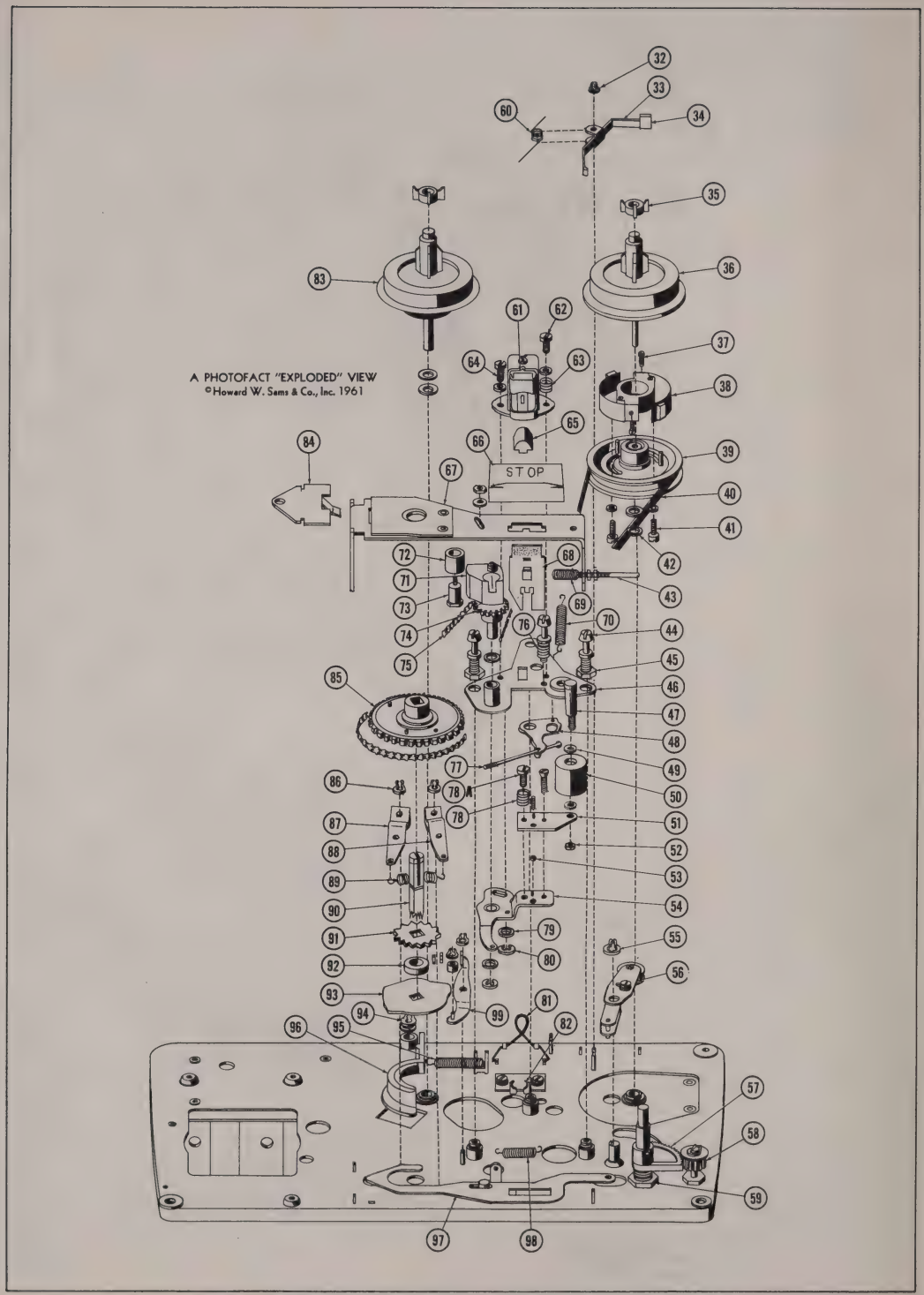
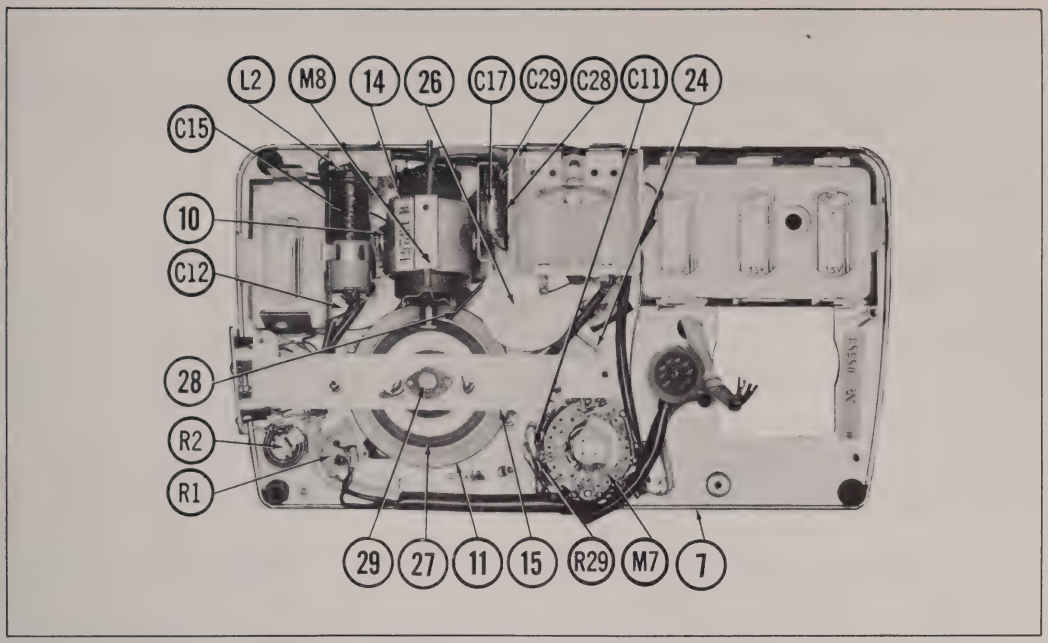
EXPLODED VIEW OF PARTS ABOVE BASE PLATE



EXPLODED VIEW OF PARTS BELOW BASE PLATE



BOTTOM VIEW OF MECHANISM

DISASSEMBLY

To Remove Recorder From the Case

1. Unfasten the large slotted screw on the bottom of the case and remove the bottom.
2. Remove all control knobs.
3. Remove the three bolt-nuts holding the mechanism to the escutcheon and then lift the mechanism from the case.
4. Reverse the foregoing procedure to reassemble.

To Remove Amplifier From Tape Transport

1. Disconnect all interconnecting leads.
2. Unplug the interconnecting plug.
3. Remove four screws holding the printed board to the tape transport mechanism.
4. Carefully lift the printed board away from the tape transport mechanism.
5. Reverse the foregoing procedure to reassemble.

ADJUSTMENTS

Takeup Reel Brake

To tighten the brake, unlock the locking nut on motor brake actuating lever (48) and then turn the adjusting nut clockwise so the brake lever assembly will have full pressure against the reel. Tighten locking nut.

Takeup Drive Belt Idler

Loosen the slot head screw and move the takeup drive belt idler assembly (56) to the left or right and tighten the slot head screw.

Play-Record Head

Turn screw (62) to adjust the play-record head. Use a good prerecorded tape to make this adjustment. Adjust for the loudest output of sound.

Pressure Roller

Adjust screw (78A) so the pressure roller is parallel to the capstan. If it is not parallel to the capstan, the tape will run up or down as it passes between them.

Flywheel

Adjust screw (29) so the flywheel will rotate freely.

CLEANING

The erase head, play-record head, pressure roller, and capstan accumulate tape coating oxide worn off the tape as it passes these parts. Since this accumulation will cause poor performance, it should be removed periodically with a clean cloth. If dirt is caked or hard and will not come off with a dry cloth, dampen cloth slightly with alcohol.

LUBRICATION

Lubrication should not be required for a long period of time. If the recorder is disassembled for repair, apply a thin coat of grease on the sliding levers and a drop of oil on the flywheel bearings.

TROUBLE CHART

Symptom	Cause	Remedy
No rewind.	1. Tension spring (20) broken or disconnected.	1. Connect or replace tension spring (20).
	2. Drive belt (28) broken.	2. Replace drive belt (28).
	3. Drive idler pulley (26) loose on its shaft.	3. Tighten set screw (25) in drive idler pulley (26).
No record or playback.	1. Play-record head (61) defective.	1. Replace play-record head (61).
	2. Pressure roller tension spring (69) disconnected or broken.	2. Connect or replace pressure roller tension spring (69).
No erase.	1. Erase head (71) defective.	1. Replace erase head (71).
	2. Erase head (71) positioned wrong.	2. Position erase head (71) so it is parallel with the tape when in the record position.
No takeup in play or record position.	1. Takeup drive belt (40) broken.	1. Replace takeup drive belt (40).
	2. Takeup drive belt idler tension spring (98) broken or disconnected.	2. Connect or replace tension spring (98).
	3. Takeup drive belt idler (56) misadjusted.	3. See "Takeup-Drive Belt Idler" under "Adjustments".
Rewind reel brake inoperative.	1. Rewind brake tension spring (95) broken or disconnected.	1. Connect or replace rewind brake tension spring (95).
Takeup reel brake inoperative.	1. Brake lever tension spring (60) broken.	1. Replace brake lever tension spring (60).
	2. Motor and takeup brake actuating lever (48) misadjusted.	2. See "Takeup Reel Brake" under "Adjustments".
Selector switch operates too freely.	1. Tension spring (89) broken or disconnected.	1. Connect or replace tension spring (89).

MECHANICAL PARTS LIST

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
1	695-1	Sensitivity Knob in Record Volume Knob in Playback	10	695-10	Motor Cradle
2	695-2	Monitoring Knob in Record Tone Control Knob in Playback	11	695-11	Flywheel and Capstan Assembly
3	695-3	Felt Washer	12	695-12	Hex Nut
4	695-4	Plastic Escutcheon	13	695-13	Grommet
5	695-5	Head Cover	14	695-14	Motor
6	695-6	Top Escutcheon	15	695-15	Flywheel Holder and Printed Board Support
7	695-7	Deck Plate	16	695-16	Variable Knob
8	695-8	Motor Support Spring	17	695-17	Selector Switch Knob
9	695-9	Motor Support Spring Adjusting Screw	18	695-18	Felt Washer
			19	695-19	Rewind Pulley

MECHANICAL PARTS LIST (CON'T.)

Ref. No.	Part No.	Description
20	695-20	Tension Spring
21	695-21	Fiber Washer
22	695-22	Hex Nut
23	695-23	Rewind Lever Adjusting Screw
24	695-24	Rewind Lever
25	695-25	Set Screw
26	695-26	Drive Idler Pulley
27	695-27	Flywheel Drive
28	695-28	Drive Belt
29	695-29	Flywheel Bearing Adjusting Screw
30	695-30	Lock Nut
31	695-31	Flywheel Drive Mounting Screw
32	695-32	Grip Ring
33	695-33	Brake Lever
34	695-34	Brake Pad
35	695-35	Reel Holder
36	695-36	Takeup Spindle
37	695-37	Adjustment Screw
38	695-38	Clutch
39	695-39	Takeup Reel Drive Spindle
40	695-40	Takeup Drive Belt
41	695-41	Screw
42	695-42	Fiber Washer
43	695-43	Adjustment Screw
44	695-44	Tape Guide
45	695-45	Lock Nut
46	695-46	Head and Pressure Roller Mounting Plate
47	695-47	Screw
48	695-48	Motor and Takeup Brake Actuating Lever
49	695-49	Fiber Washer
50	695-50	Pressure Roller
51	695-51	Pressure Roller Adjusting Plate
52	695-52	Hex Nut
53	695-53	Ball Bearing
54	695-54	Erase Head Actuating Lever
55	695-55	Grip Ring
56	695-56	Takeup Drive Belt Idler Assembly
57	695-57	Gear Segment
58	695-58	Monitoring-Tone Control Gear
59	695-59	Hex Nut
60	695-60	Brake Lever Tension Spring

Ref. No.	Part No.	Description
61	695-61	Record-Playback Head
62	695-62	Aszmith Adjust Screw
63	695-63	Tension Spring
64	695-64	Head Mounting Screw
65	695-65	Head Pivot
66	695-66	Stop Button
67	695-67	Selector Switch Bracket
68	695-68	Stop Lever
69	695-69	Pressure Roller Tension Spring
70	695-70	Motor and Brake Actuating Lever Tension Spring
71	695-71	Erase Head
72	695-72	Roller
73	695-73	Screw
74	695-74	Erase Head Gear
75	695-75	Chain
76	695-76	Tape Guide Tension Spring
77	695-77	Motor and Brake Lever Adjusting Rod
78	695-78	Pressure Roller Adjustment Tension Spring
78A	695-78A	Pressure Roller Adjustment Screw
79	695-79	Washer
80	695-80	"C" Washer
81	695-81	Record Level Tension Spring
82	695-82	Record Level Bracket
83	695-83	Rewind Spindle
84	695-84	Record Safety Lock
85	695-85	Function Selector Gear
86	695-86	Grip Ring
87	695-87	Left Selector Switch Detent
88	695-88	Right Selector Switch Detent
89	695-89	Tension Spring
90	695-90	Function Selector Shaft
91	695-91	Detent Gear
92	695-92	Spacer
93	695-93	Motor and Brake Actuating Lever Plate
94	695-94	Grip Ring
95	695-95	Rewind Brake Tension Spring
96	695-96	Rewind Brake
97	695-97	Takeup Drive Idler Assembly Actuating Lever
98	695-98	Takeup Drive Ilder Tension Spring

ELECT. PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
	• GENERAL ELECTRIC •		• RAYTHEON •	• SYLVANIA •	
V1	Record Level Ind.	DM71			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA COLUMBIA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1	5	12	11K799	PTT-12005	NLW5-15	TT12X5	MLV5-12	TE-1127	
C2	5	12	11K799	PTT-12005	NLW5-15	TT12X5	MLV5-12	TE-1127	
C3	25	3	11K804	PTT-3025	NLW25-3	TT3X25	MLV25-3	TE-1055	
C4	10	12	11K802	PTT-12010	NLW10-15	TT12X10	MLV10-12	TE-1128	
C5	10	6	11K801	PTT-6010	NLW10-6	TT6X10	MLV10-6	TE-1087	
C6	50	3	11K807	PTT-3050	NLW50-3	TT3X50	MLV50-3	TE-1058	
C7	5	12	11K799	PTT-12005	NLW5-15	TT12X5	MLV5-12	TE-1127	
C8	5	12	11K799	PTT-12005	NLW5-15	TT12X5	MLV5-12	TE-1127	
C9	100	3	11K809	PTT-3100	NLW100-3	TT3X100	MLV100-3	TE-1059.5	
C10	100	12	11K810	PTT-15100	NLW100-12	TT15X100	MLV100-12	TE-1135	
C11	100	15		PTT-15100	NLW100-15	TT15X100	MLV100-15	TE-1162	Note 1
C12	1000	12	11K797	PRS1180	BR1000I	TC150I	TD-1000-15	TVA-1133	
C13	25	12	11K805	PTT-12025	NLW25-15	TT25X25	MLV25-12	TE-1131	
C14	25	12	11K805	PTT-12025	NLW25-15	TT25X25	MLV25-12	TE-1131	
C15	750	12	11K796	PRS1180		TC150I	TD-1000-15		
C16	2	30	11K798	PTT-50002	NLW2-50	TC30Z	MLV2-50	TE-1301	
C17	100	6	11K795	PTT-6100	NLW100-15	TT6X100	MLV100-6	TE-1102	

Note 1. Some versions may use 12 volt unit in this application (Part #11K810).

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C18	3000		SI 3000	D6-302	BYA10D3	CCD-302	B-230	10TS-D30
C19	20000		SI 20000	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C20	10000		SI 10000	D6-103	BYA10S1	CCD-103	B-110	5HK-S10
C21	3000		SI 3000	D6-302	BYA10D3	CCD-302	B-230	10TS-D30
C22	10000		SI 10000	D6-103	BYA10S1	CCD-103	B-110	5HK-S10
C23	200		SI 200	D6-201	L10T2	CCD-201	GP320	10TS-T20
C24	20000		SI 20000	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C25	.27 125V 10%		V84C2P25-10%		DPMS2P25	ZDP-4-254	GEM-2025	ZWF-P27
C26	20000		SI 20000	DD-203	BYB6S2	CCD-203	B-110	5HK-S20
C27	300		SI 300	D6-301	L10T3	CCD-301	GP333	10TS-T30
C28	5000		SI 5000	D6-502	BYA10D5	CCD-502	B-250	5HK-D50
C29	5000		SI 5000	D6-502	BYA10D5	CCD-502	B-250	5HK-D50

CONTROLS

ITEM No.	RATING RESIST-ANCE	RATING WATTS	REPLACEMENT DATA COLUMBIA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	10K	½	9K666					Volume
R2	50Ω	2(WW)	9K667					Tone
R3	2000Ω	½	16K471					Balance
R4	500K	½	16K473					Record Level
R5	100K	½	16K472					Bias Osc. Adjust

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R6	10K			
R7	22K			
R8	68K			
R9	22K			
R10	680Ω			
R11	5600Ω			
R12	6800Ω			
R13	56K			
R14	22K			
R15	100Ω			
R16	4700Ω			
R17	33K			
R18	15K			
R19	68K			
R20	18K			
R21	6800Ω			

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R22	33K			
R23	5600Ω			
R24	680Ω			
R25	4700Ω			
R26	1000Ω			
R27	56Ω			
R28	35Ω Cold			Pt. #16K474
R29	220Ω			
R30	39K			
R31	220K			
R32	1000Ω			
R33	1800Ω			
R34	1000Ω			
R35	22K			
R36	33Ω			

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA COLUMBIA PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	NOTES
L1	Oscillator	20K433				

FILTER CHOKE

ITEM No.	RATINGS CURRENT (Measured)	RATINGS DC RES.	RATINGS INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA COLUMBIA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
L2	.050A	9.8Ω	.380 HY	20K430					

TRANSFORMER (OSC.)

ITEM No.	TURNS RATIO PRI.	TURNS RATIO SEC.	REPLACEMENT DATA COLUMBIA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1			20K432					

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO PRI.	TURNS RATIO SEC.	REPLACEMENT DATA COLUMBIA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	1.8	1	3K269					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI. 1	IMPEDANCE SEC. 1	REPLACEMENT DATA COLUMBIA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T3	220Ω CT	3-4Ω	3K270					
	PRI. 2	SEC. 2						
	3Ω CT	36Ω						

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA COLUMBIA PART No.	QUAM PART No.	NOTES
SP1	3½"	PM	3-4Ω	1K178	3A05	

BATTERIES

ITEM No.	VOLTAGE	COLUMBIA PART No.	BURGESS "A"	BURGESS "B"	EVEREADY "A"	EVEREADY "B"	MALLORY "A"	MALLORY "B"	NOTES
M1	1.5	*		230 *		A100 *		M-13R *	* 4 Required
M2	1.5	♦		130 ♦		635 ♦		M-14R ♦	♦ 2 Required

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA COLUMBIA PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
M3	OA70	20K375		1N60	1N60	Record Level Indicator Rect.
M4	OA70	20K375		19K798	1N60	Record Level Indicator Rect.

MISCELLANEOUS

ITEM No.	PART NAME	COLUMBIA PART No.	NOTES
M5	Head	20K431	Record-Playback
M6	Switch	19K796	Record-Playback (Slider Type)
M7	Switch	19K798	Selector (Rotary Type)
M8	Motor	6K320	Drive

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

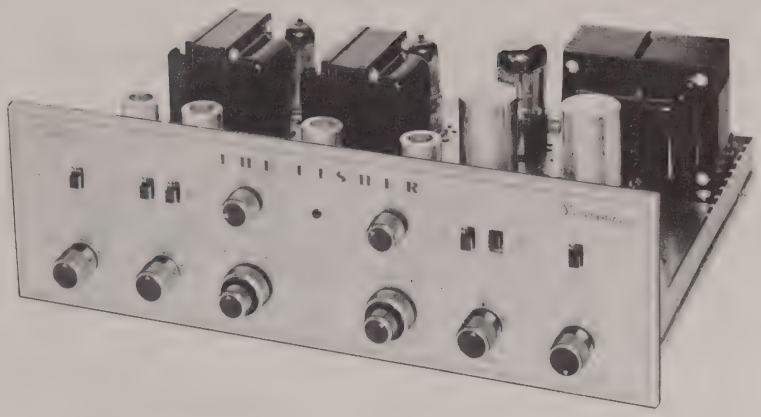
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

Low-Loss Shielded Lead (Interconnecting) ..... Use BELDEN No. 8401

Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)

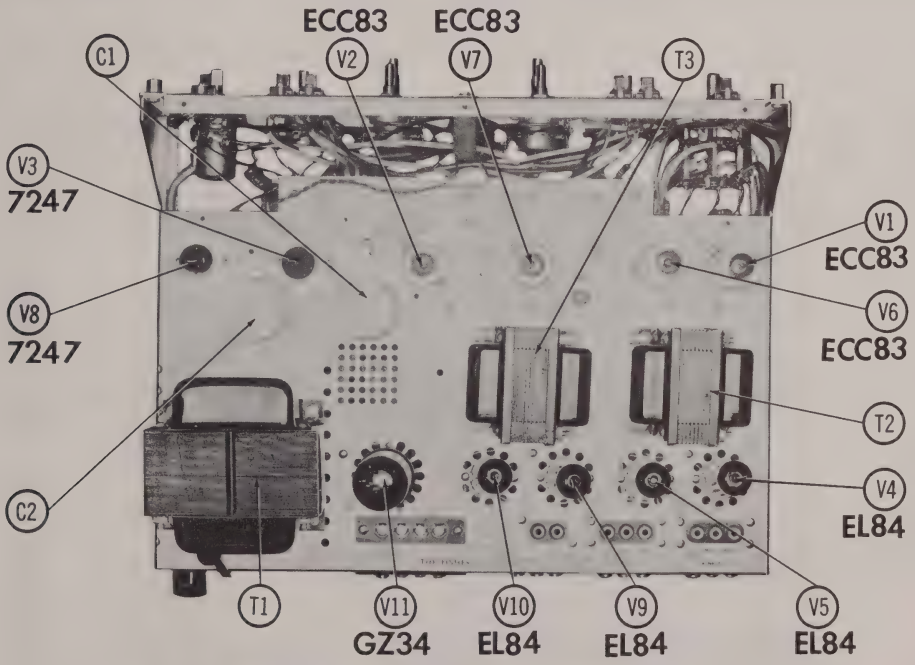
PHOTOFACT® Folder

FISHER MODEL
X-100



FISHER MODEL
X-100

TRADE NAME	Fisher Model X-100 (Serial #10001-19999 Inclusive)		
MANUFACTURER	Fisher Radio Corp., 21-21 44th Drive, Long Island City 1, N. Y.		
TYPE SET	AC Operated 11 Tube Stereo Amplifier		
POWER SUPPLY	105-120 Volts AC, 50-60 Cycles	RATING	135 Watts, 1.2 Amp. @ 117 Volts AC



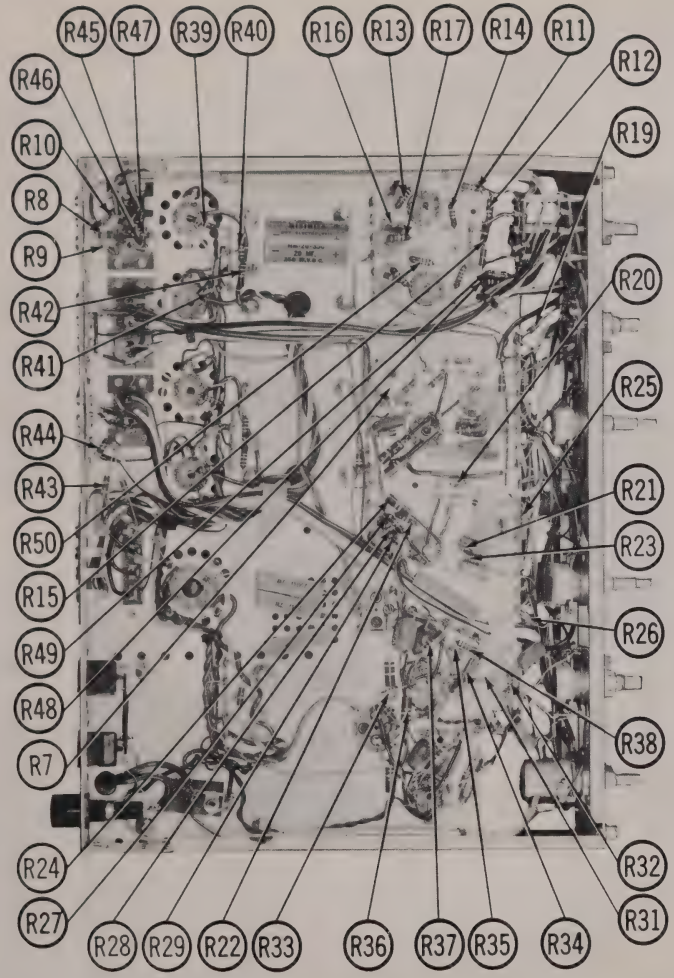
FISHER MODEL
X-100

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

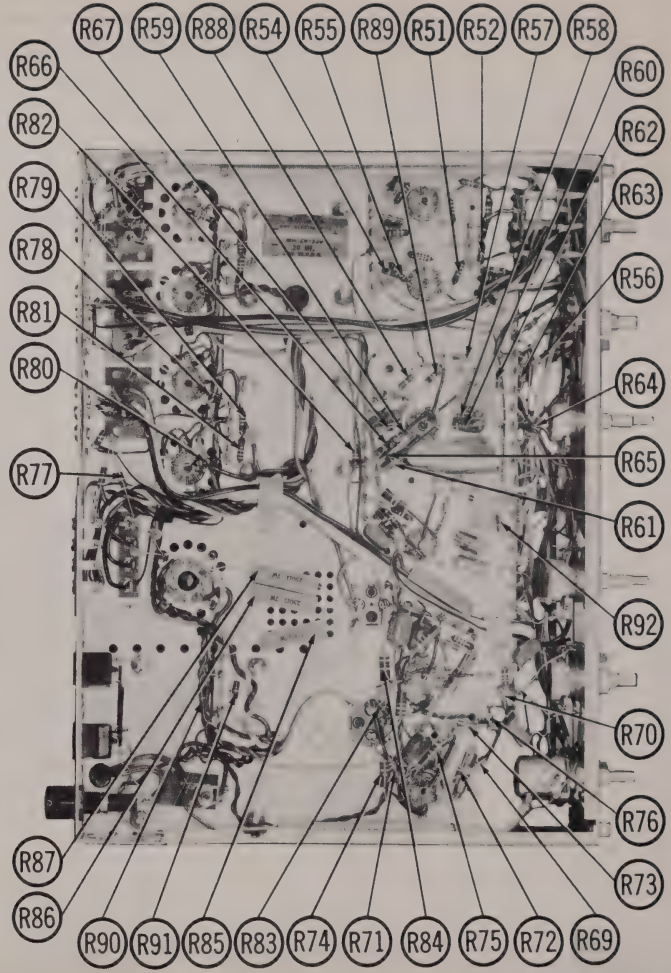
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

KV372

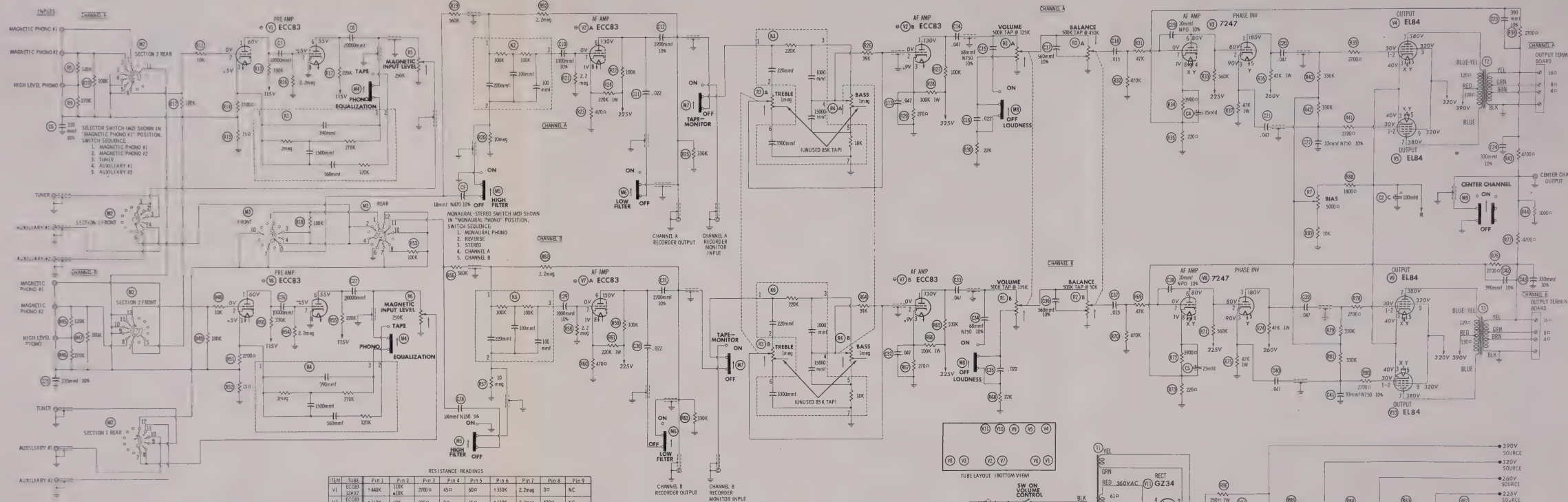
SET 525 FOLDER 7



CHASSIS-BOTTOM VIEW-RESISTOR IDENTIFICATION



CHASSIS-BOTTOM VIEW-RESISTOR IDENTIFICATION



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC83 12AX7	†440K	110K ■10K	2700Ω	45Ω	60Ω	†330K	2.2meg	0Ω	NC
V2	ECC83 12AX7	†110K	60K	270Ω	0Ω	15Ω	†110K	2.2meg	470Ω	NC
V3	7247	†52K	†570K	47K	160Ω	160Ω	†570K	520K	4100Ω	160Ω
V4	EL84 6BQ5	NC	335K	60Ω	160Ω	160Ω	NC	†245Ω	NC	†2300Ω
V5	EL84 6BQ5	NC	335K	60Ω	160Ω	160Ω	NC	†255Ω	NC	†2300Ω
V6	ECC83 12AX7	†440K	110K ■10K	2700Ω	45Ω	30Ω	†330K	2.2meg	0Ω	NC
V7	ECC83 12AX7	†110K	60K	270Ω	15Ω	30Ω	†110K	2.2meg	470Ω	NC
V8	7247	†52K	†570K	47K	160Ω	160Ω	†570K	520K	4100Ω	160Ω
V9	EL84 6BQ5	NC	335K	60Ω	160Ω	160Ω	NC	†245Ω	NC	†2300Ω
V10	EL84 6BQ5	NC	335K	60Ω	160Ω	160Ω	NC	†265Ω	NC	†2300Ω
V11	GZ34 5AW4	NC	¶	NC	61Ω	NC	56Ω	NC	¶	

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 8 OF V11.
■ TAKEN WITH SELECTOR IN AUX POSITION. NC NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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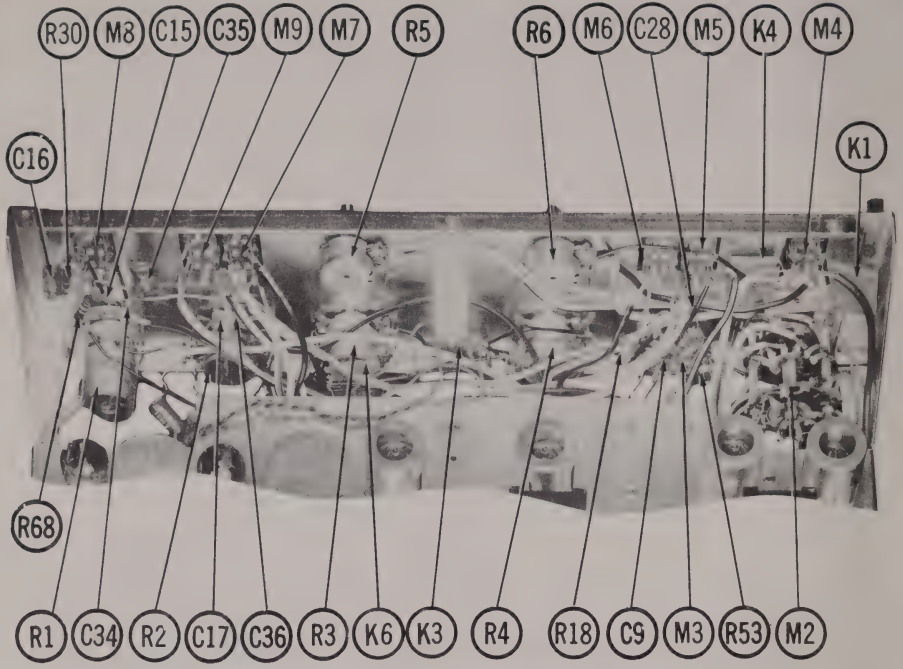
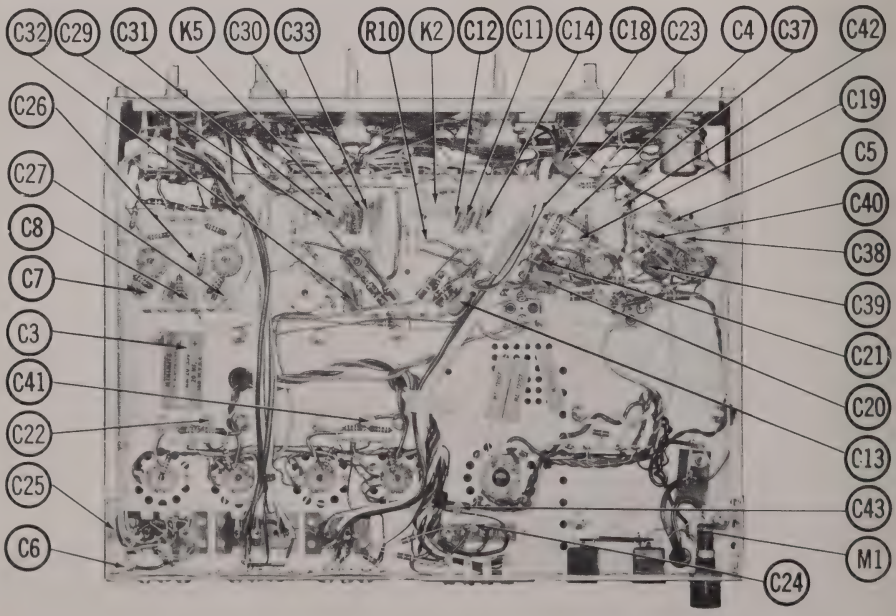
FISHER MODEL X-100



CONTROL PANEL-REAR VIEW



CHASSIS BOTTOM VIEW-CAPACITOR IDENT.

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆)
V1	Channel A Preamp.	ECC83/12AX7 (7025) *
V2	Channel A AF Amp.	ECC83/12AX7 (7025) *
V3	Channel A AF Amp. - Channel A Phase Inv.	7247
V4	Channel A Output	EL84/6BQ5
V5	Channel A Output	EL84/6BQ5
V6	Channel B Preamp.	ECC83/12AX7 (7025) *
V7	Channel B AF Amp.	ECC83/12AX7 (7025) *
V8	Channel B AF Amp. - Channel B Phase Inv.	7247
V9	Channel B Output	EL84/6BQ5
V10	Channel B Output	EL84/6BQ5
V11	Rectifier	GZ34/5AR4

* Alternate

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA FISHER PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲60	450	C663-136	AFH2-58	XB0455	FP239	TMD-2665	TVL-2767	
B	▲40	450							
C2A	■40	450	C50180-14		B0450	FP238	TMD-2650	TVL-2764	
B	▲40	450			BR10015	TC493	TD-100-150	TVA-1420	
C	▲100	150							
C3	20	350	C692-131	PRS1735	BR2035	TC65	TD-20-350	TVA-1606	
C4	25	6	C639-114	PTT-6025	NLW25-6	TT6X25	ML6-25	TE-1091	
C5	25	6	C639-114	PTT-6025	NLW25-6	TT6X25	ML6-25	TE-1091	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C6	330	10%		DI-330	DD-331	L10T33	CCD-331	GP333	10TS-T33
C7	10000			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C8	20000			BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C9	18 N470	10%	#C50070-13				*		
C10	1000	10%		DI-1000	DD-102	5R5D1	CCD-102	GP210	10TS-D10
C11	.022	250V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C12	2200	10%		DI-2200		PM6D22	CCD-222	GP222	10TS-D22
C13	.047	250V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C14	.047	250V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C15	68 N750	10%		N750-DI 68	DTN-68	C10Q68U	CCTN-680	CN7-468	10TCU-Q68
C16	.022	250V		P288N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C17	560	10%		DI-560	DD-560	5R5T56	CCD-561	GP356	10TS-T56
C18	.015	250V		P488N-015	DD-153	CUB6S15	4DP-1-153	GEM-4115	4TM-S15
C19	10 NPO	10%		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C20	.047	400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C21	.047	400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C22	33 N750	10%		N750-DI 33	DTN-33	C10Q33U	CCTN-330	CN7-433	10TCU-Q33
C23	390	10%		DI-390	DD-391	L10T39	CCD-390	GP339	10TS-T39
C24	330	10%		DI-330	DD-331	L10T33	CCD-331	GP333	10TS-T33
C25	330	10%		DI-330	DD-331	L10T33	CCD-331	GP333	10TS-T33
C26	10000			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C27	20000			BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C28	24 N150	5%	#C50070-8				*		
C29	1000	10%		DI-1000	DD-102	5R5D1	CCD-102	GP210	10TS-D10
C30	.022	250V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C31	2200	10%		DI-2200		PM6D22	CCD-222	GP222	10TS-D22
C32	.047	250V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C33	.047	250V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C34	68 N750	10%		N750-DI 68	DTN-68	C10Q68U	CCTN-680	CN7-468	10TCU-Q68

FIXED CAPACITORS (cont)

ITEM No.	RATING		REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C35	.022	250V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C36	560	10%		DI-560	DD-560	5R5T56	CCD-561	GP356	10TS-T56
C37	.015	250V		P488N-015	DD-153	CUB6S15	4DP-1-153	GEM-4115	4TM-S15
C38	10	NPO 10%		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C39	.047	400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C40	.047	400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C41	33	N750 10%		N750-DI 33	DTN-33	C10Q33U	CCTN-330	CN7-433	10TCU-Q33
C42	390	10%		DI-390	DD-391	L10T39	CCD-391	GP339	10TS-T39
C43	330	10%		DI-330	DD-331	L10T33	CCD-331	GP333	10TS-T33

Fisher Part Number. * Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA FISHER PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K 125K Tap	½	R50160-44	BT-66			FA55T15	Volume, Channel A
B	500K 125K Tap	½		STR-66			RU55T15	Volume, Channel B
C	Shaft			Not Req.			CS-3500	
D	Switch			KR-1			US-41	
R2A	500K 50K Tap	½	R50160-45					Balance, Channel A
B	500K 450K Tap	½						Balance, Channel B
R3A	1meg *	½	R50160-43			† QJ-1522R		Treble, Channel B
B	1meg *	½						Treble, Channel A
R4A	1meg *	½	R50160-43			† QJ-1522R		Bass, Channel B
B	1meg *	½						Bass, Channel A
R5A	250K	½	R50160-46	AB-50	A47-250K-Z	B13-130	U46	Mag. Input Level, Channel A
B	Shaft			AK-33	RS-3/16	SK9	DS-37	
R6A	250K	½	R50160-46	AB-50	A47-250K-Z	B13-130	U46	Mag. Input Level, Channel B
B	Shaft			AK-33	RS-3/16	SK9	DS-37	
R7A	5000Ω	½	R50103-4	BX-10	A47-5000-S	Q11-114	U14	Bias
B	Shaft			Not Req.	FKS-1/4	Not Req.	Not Req.	

* 85K Tap not used.

† "CONCENTRIKIT" Equivalent: K-6 Kit with Base Elements and Shafts: B18-137X, P17-028 (Panel)
(Not available as a factory assembled unit). B18-137X, R1-105 (Rear)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R8	120K			
R9	270K			
R10	100K			
R11	10K			
R12	100K			
R13	330K			
R14	2700Ω			
R15	15Ω			
R16	2.2meg			
R17	220K			

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R18	100K			
R19	560K			
R20	10meg			
R21	2.2meg			
R22	100K			
R23	470Ω			
R24	220K 1W			
R25	330K			
R26	39K			
R27	100K			

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (cont)

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS
R28	100K 1W			
R29	270Ω			
R30	22K			
R31	47K			
R32	470K			
R33	560K			
R34	3900Ω			
R35	220Ω			
R36	47K 1W			
R37	47K 1W			
R38	2700Ω			
R39	2700Ω			
R40	330K			
R41	2700Ω			
R42	330K			
R43	4700Ω			
R44	1000Ω			
R45	120K			
R46	270K			
R47	100K			
R48	10K			
R49	100K			
R50	330K			
R51	2700Ω			
R52	15Ω			
R53	100K			
R54	2.2meg			
R55	220K			
R56	560K			
R57	10meg			
R58	2.2meg			
R59	100K			
R60	470Ω			

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS
R61	220K 1W			
R62	2.2meg			
R63	330K			
R64	39K			
R65	100K			
R66	100K 1W			
R67	270Ω			
R68	22K			
R69	47K			
R70	470K			
R71	560K			
R72	3900Ω			
R73	220Ω			
R74	47K 1W			
R75	47K 1W			
R76	2700Ω			
R77	4700Ω			
R78	2700Ω			
R79	330K			
R80	2700Ω			
R81	330K			
R82	100K			
R83	2700Ω			
R84	3300Ω 1W			
R85	2200Ω 7W	PW10-2200Ω	10W-2200Ω	Pt. #R563-148
R86	250Ω 7W	PW10-250Ω	10W-250Ω	Pt. #R539-121
R87	250Ω 7W	PW10-250Ω	10W-250Ω	Pt. #R539-121
R88	1800Ω			
R89	10K			
R90	220Ω			
R91	220Ω			
R92	2.2meg			

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	FISHER PART No.	REPLACEMENT DATA
K1	Equal. Comp.	390mmf, 560mmf, 1500mmf, 120K, 270K, 2meg	PC50187-3	
K2	Hi-Freq. Filter	(2) 100mmf, 220mmf, (2) 100K	PC50187-2	
K3	Tone Comp.	220mmf, 1000mmf, 3300mmf, 15000mmf, 18K, 220K	PC50187-4	
K4	Equal. Comp.	390mmf, 560mmf, 1500mmf, 120K, 270K, 2meg	PC50187-3	
K5	Hi-Freq. Filter	(2) 100mmf, 220mmf, (2) 100K	PC50187-2	
K6	Tone Comp.	220mmf, 1000mmf, 3300mmf, 15000mmf, 18K, 220K	PC50187-4	

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	FISHER PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	117V @ 1.2A	720VCT @ .160A DC	5V @ 1.9A	T781-115					
	SEC. 3	SEC. 4	SEC. 5						
	6.3V @ 4.1A								

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	FISHER PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	7300Ω CT	16Ω Tap @ 8Ω, 4Ω	T781-116-1					
T3	7300Ω CT	16Ω Tap @ 8Ω, 4Ω	T781-116-2					

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			FISHER PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	3 2/10A 125V S/B	F3319	X1036	31303.2 (3AG 3 2/10A 125V S/B)	342001	MDX 3 2/10	HKP

MISCELLANEOUS

ITEM No.	PART NAME	FISHER PART No.	NOTES
M2	Switch	S781-129	Selector (Rotary Wafer Type)
M3	Switch	S781-130	Mono-Stereo
M4	Switch	S50200-2	Equalization, DPDT Slide Type
M5	Switch	S50200-2	Hi Filter, DPDT Slide Type
M6	Switch	S50200-2	Lo Filter, DPDT Slide Type
M7	Switch	S50200-2	Tape-Mono, DPDT Slide Type
M8	Switch	S50200-2	Loudness, DPDT Slide Type
M9	Switch	S50200-2	Center Ch., DPDT Slide Type

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	E50133-2	Volume, Balance, Selector, Mono-Stereo
Knob	E50153-1	Rear, Bass, Treble
Knob	E50152	Front, Bass, Treble

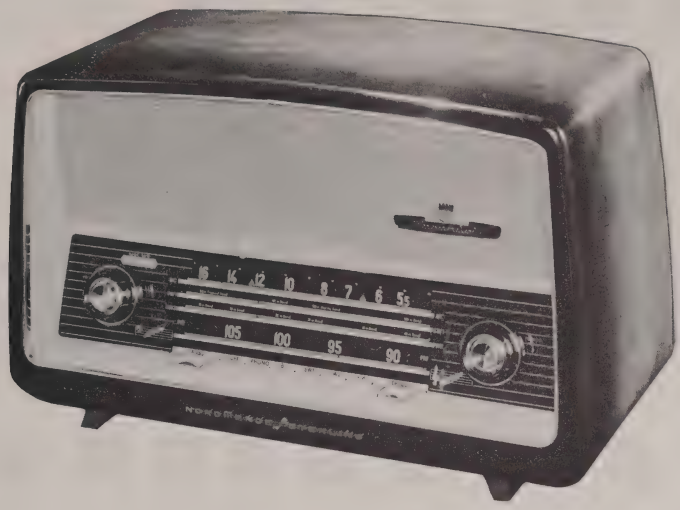
WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

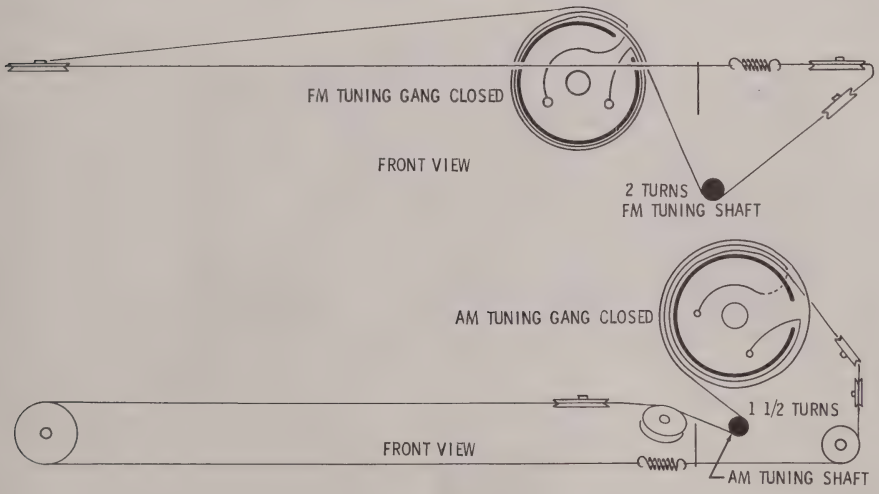
PHOTOFACT® Folder with CIRCUITRACE®

NORDMENDE MODEL
Turandot (U-148)



TRADE NAME	Nordmende Model Turandot (U-148)		
IMPORTER	Sterling Hi-Fidelity, Inc., 22-14 40th Ave., Long Island City 1, N. Y.		
TYPE SET	AC Operated 6 Tube FM-BC-SW Receiver		
POWER SUPPLY	110/125/150/220/240 Volts AC, 60 Cycles	RATING	52 Watts, .5 Amp. @117 Volts AC(FM)(On 110V Tap)
TUNING RANGE—BROADCAST	540 — 1600KC	SHORT WAVE #1	1.6 — 4.9MC
FREQ. MOD.	88 — 108MC	SHORT WAVE #2	6.1 — 17.9MC

DIAL CORD STRINGING



HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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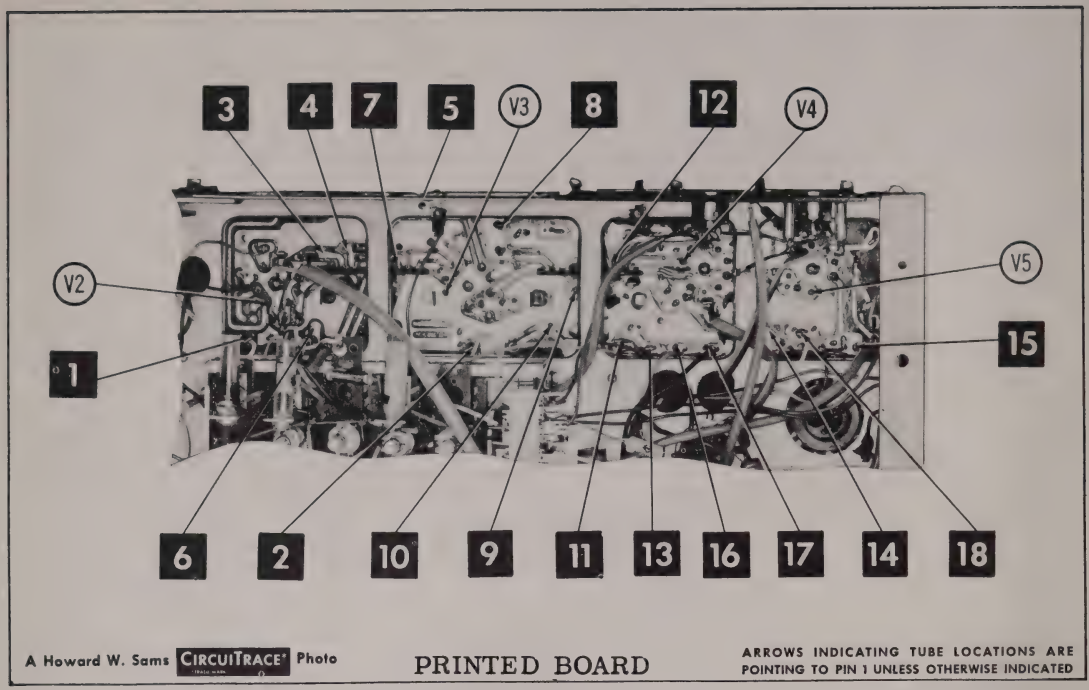
KK366

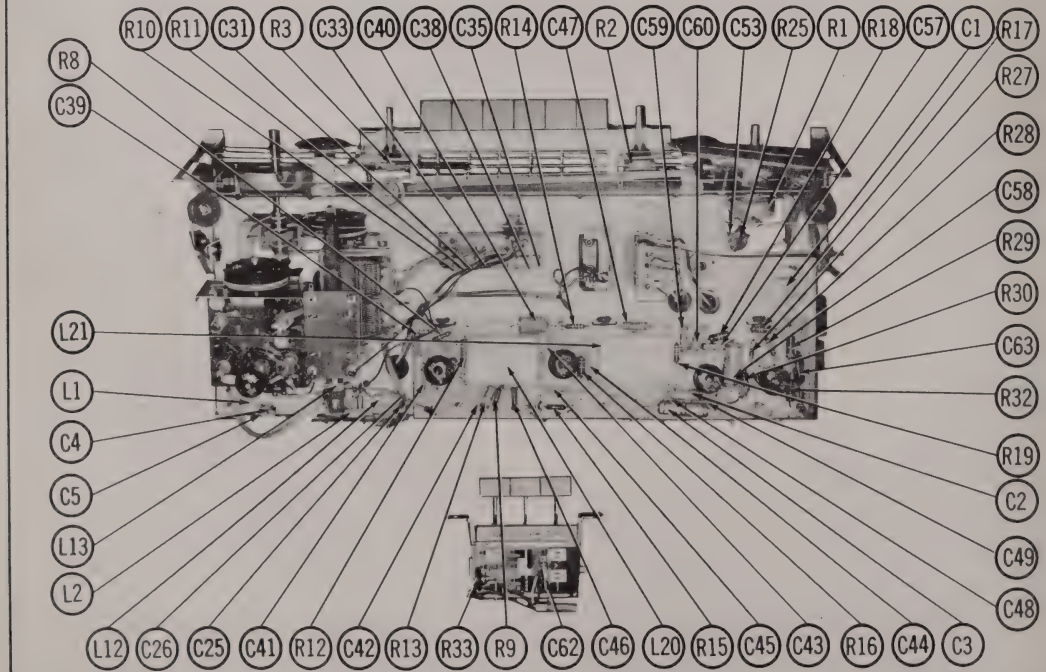
NORDMENDE MODEL
Turandot (U-148)
NORDMENDE MODEL
Turandot (U-148)
SET 525 FOLDER 8



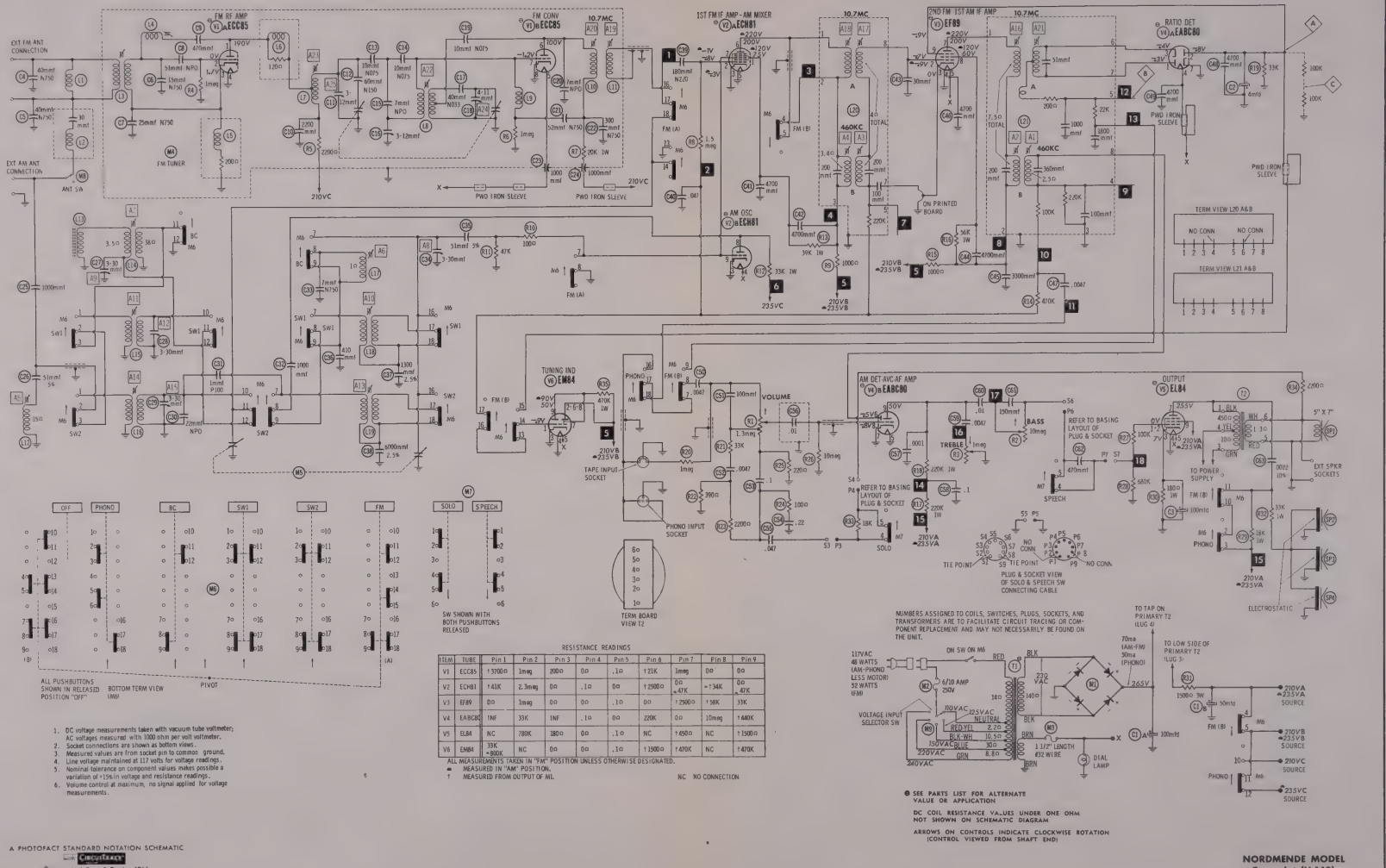
A Howard W. Sams CIRCUITRACE® Photo

PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



CHASSIS TOP VIEW-CAPACITOR, RESISTOR & INDUCTOR IDENT.


FM RF AMP V1 ECC85
FM CONV V1 ECC85
10.7MC
1ST FM IF AMP - AM MIXER V2 ECH81
2ND FM 1ST AM IF AMP V3 EF89
RATIO DET V4 EABC80
AM OSC V2 ECH81
TUNING IND V6 EM84
AM DET-AVC-AF AMP V4 EABC80
OUTPUT V5 EL84
FM TUNER
ANT SW
EXT FM ANT CONNECTION
EXT AM ANT CONNECTION
PWD IRON SLEEVE
460KC
TERM VIEW L20 A6B
TERM VIEW L21 A6B
NO CONN
VOLUME
BASS
TREBLE
TAPE INPUT SOCKET
PHONO INPUT SOCKET
TIE POINT
SOLO
SPEECH
REFER TO BASING LAYOUT OF PLUG & SOCKET
TO POWER SUPPLY
EXT SPKR SOCKETS
ELECTROSTATIC
OFF
PHONO
BC
SW1
SW2
FM
ALL PUSHBUTTONS SHOWN IN RELEASED POSITION "OFF"
BOTTOM TERM VIEW
PIVOT
SW SHOWN WITH BOTH PUSHBUTTONS RELEASED
TERM BOARD VIEW T2
PLUG & SOCKET VIEW OF SOLO & SPEECH SW CONNECTING CABLE
117VAC 48 WATTS (AM-PHONO LESS MOTOR) 52 WATTS (FM)
ON SW ON M6
VOLTAGE INPUT SELECTOR SW
DIAL LAMP
TO TAP ON PRIMARY T2 (LUG 3)
TO LOW SIDE OF PRIMARY T2 (LUG 4)
70ma (AM-FM) 50ma (PHONO)
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±5% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC85	↑3700Ω	1meg	200Ω	0Ω	.1Ω	↑21K	1meg	0Ω	0Ω
V2	ECH81	↑41K	2.3meg	0Ω	.1Ω	0Ω	↑2500Ω	0Ω ≈47K	≈134K	0Ω ≈47K
V3	EF89	0Ω	1meg	0Ω	0Ω	.1Ω	0Ω	↑2500Ω	↑58K	33K
V4	EABC80	1NF	33K	1NF	.1Ω	0Ω	220K	0Ω	10meg	↑440K
V5	EL84	NC	780K	180Ω	0Ω	.1Ω	NC	↑450Ω	NC	↑1500Ω
V6	EM84	33K ≈800K	NC	0Ω	0Ω	.1Ω	↑1500Ω	↑470K	NC	↑470K

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
≈ MEASURED IN "AM" POSITION.
↑ MEASURED FROM OUTPUT OF M1. NC NO CONNECTION

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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NORDMENDE MODEL Turandot (U-148)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1 Thru A7, A10, A11, A13, A14, A16 Thru A23...GENERAL CEMENT #8282, 8606, 8606-L, 9091
WALSCO #2526, 2541, 2542, 2543, 2544
A8, A9, A12, A15.....GENERAL CEMENT #5000, 5003, 8276, 8290
WALSCO #2512, 2515, 2522, 2523, 2525, 2537

AM ALIGNMENT – SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru 200mmf and 400Ω in series to pin 2 (grid) of AM Mixer. Low side to chassis.	460KC (400∿ Mod.)	(BC) Tuning gang fully open.	Across voice Coil	A1, A2, A3, A4	Adjust for maximum output.
2.	High side thru 200mmf and 400Ω in series to AM antenna terminal. Low side to chassis.	"	"	"	A5	Adjust for MINIMUM output.
3.	"	555KC	555KC	"	A6, A7	Adjust for minimum output.
4.	"	1480KC	1480KC	"	A8, A9	Adjust for maximum output. Repeat Steps 3 and 4.
5.	"	1.6MC	(SW1) 1.6MC	"	A10, A11	Adjust for maximum output.
6.	"	4.9MC	4.9MC	"	A12	Adjust for maximum output.
7.	"	6.1MC	(SW2) 6.1MC	"	A13, A14	"
8.	"	17.9MC	17.9MC	"	A15	"

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM–SELECTOR IN FM POSITION

Connect two matched 100K (±1%) resistors in series from point Ⓐ to chassis. The junction of these two resistors is alignment point Ⓒ as shown on the schematic.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
9.	Across FM antenna terminals.	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe to point Ⓐ. Common to chassis.	A16, A17, A18, A19, A20	Adjust for maximum deflection.
10.	"	"	"	DC probe to point Ⓑ. Common to point Ⓒ.	A21	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE–SELECTOR IN FM POSITION

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
9.	Across FM antenna terminals.	10.7MC (450KC Swp)	(FM) Point of non-interference.	Vert. amp. to point Ⓐ. Low side to chassis.	A16, A17, A18, A19, A20	Disconnect Stablizing Capacitor C2. Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. Reconnect C2.
10.	"	"	"	Vert. amp. to point Ⓑ. Low side to chassis.	A21	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A16 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT–SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
11.	Across FM antenna terminals.	90MC (Unmod.)	(FM) 90MC	DC probe to point Ⓐ. Common to chassis.	A22, A23	Adjust for maximum deflection.
12.	"	106MC	106MC	"	A24, A25	Adjust for maximum deflection. Repeat Steps 11 and 12.

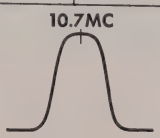


FIG. 1

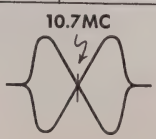
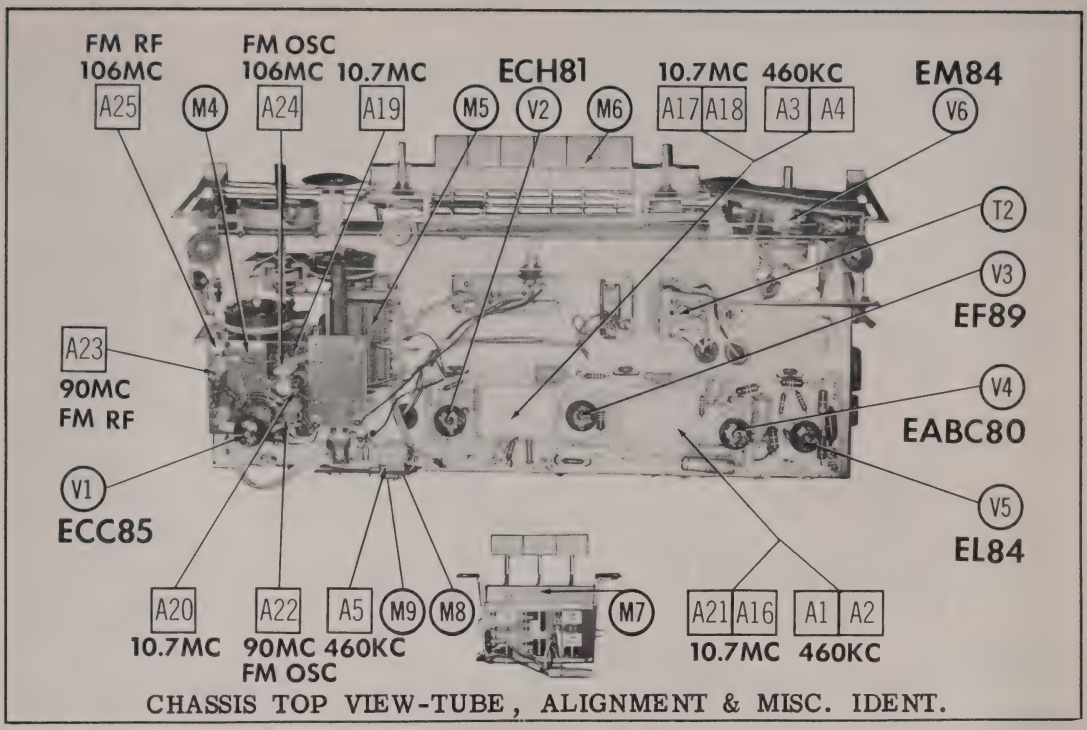
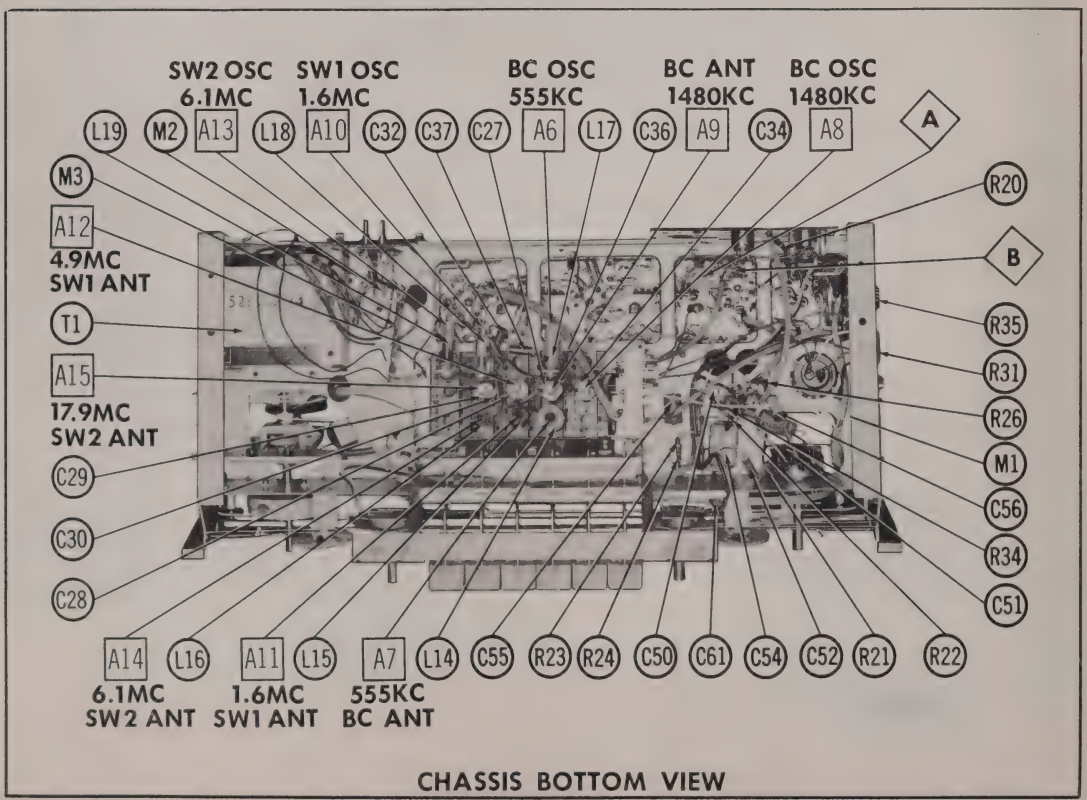


FIG. 2



CHASSIS TOP VIEW-TUBE, ALIGNMENT & MISC. IDENT.



CHASSIS BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (• GENERAL ELECTRIC)	(• RAYTHEON)	(• SYLVANIA)
V1	FM RF Amp. -FM Conv.	ECC85 (6AQ8) *		
V2	1st FM IF Amplifier- AM Mixer-AM Osc.	ECH81 (6AJ8) *		
V3	2nd FM-1st AM IF Amp.	EF89 (6DA6) *		
V4	Ratio Det. -AM Det. - AVC-AF Amp.			EABC80 (6T8, 6AK8) *
V5	Output			EL84 (6BQ5) *
V6	Tuning Indicator			EM84

* Alternate

ELECTROLYTIC CAPACITORS

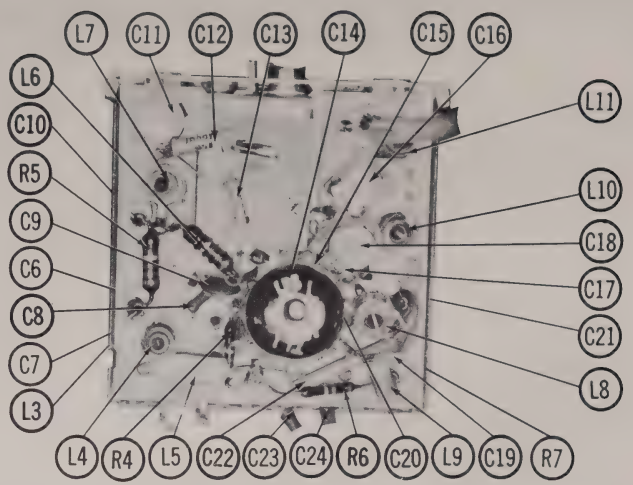
ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA NORDMENDE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	100	350	443.021.14						
B	50	350							
C2	4	70	443.062.15	PRS1400	NLW4-150	TT80X4	MLV5-100	TE-1403	
C3	100	12	443.052.15	PRS1200	NLW100-15	TT15X100	ML100-12	TE-1135	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	40 N750		N750-SI 39	TCN-39	C10Q39U	CCTN-390	CN7-439	10TCU-Q39
C5	40 N750		N750-SI 39	TCN-39	C10Q39U	CCTN-390	CN7-439	10TCU-Q39
C6	15 N750		N750-SI 15	TCN-15	C10Q15U	CCTN-150	CN7-415	10TCU-Q15
C7	25 N750		N750-SI 25	TCN-25	C10Q25U	CCTN-270	CN7-427	10TCU-Q25
C8	51 NPO		NPO-SI 51	TCZ-51	C10Q51C	CCTO-510	CNO-450	10TCC-Q50
C9	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C10	2200		BPD-0022	D6-222	BYA10D22	CCD-222	B-222	5HK-D22
C11	3-12	#447.000.15						
C12	60 N150					*		10TCP-Q56
C13	10 N075					*		
C14	10 N075					*		
C15	7 NPO		NPO-SI 6.8	TCZ-6R8	C10V7C	CCTO-6R8	CNO-568	10TCC-V68
C16	3-12	#447.000.15						
C17	40 N033					*		
C18	4-11	#447.001.15						
C19	10 N075					*		
C20	7 NPO		NPO-SI 6.8	TCZ-6R8	C10V7C	CCTO-6R8	CNO-568	10TCC-V68
C21	52 N750		N750-SI 51	TCN-51	C10Q51U			
C22	300 N750		N750-SI 300	TCN-300	C10T3U	CCTN-301	CN7-333	10TCU-T33
C23	1000		EF-001	MFT-1000		CCF-102	CT280A	
C24	1000		EF-001	MFT-1000		CCF-102	CT280A	
C25	1000		SI 1000	D6-102	BYA10D1	CCD-102	B-210	5HK-D10
C26	51 5%			TCZ-51	C10Q51C	CCTO-510	CNO-450	10TCC-Q50
C27	3-30	#447.021.15						
C28	3-30	#447.021.15						
C29	3-30	#447.021.15						
C30	22 NPO		NPO-SI 22	TCZ-22	C10Q22C	CCTO-220	CNO-422	10TCC-Q22
C31	1 P100					*		
C32	1000		SI 1000	D6-102	BYA10D1	CCD-102	B-210	5HK-D10
C33	7 N750				C10V7U		CN7-568	
C34	3-30	#447.021.15						
C35	51 5%			TCZ-51	C10Q51C	CCTO-510	CNO-450	10TCC-Q50
C36	410		SI 390	D6-401	L10T4	CCD-401	GP340	10TS-T40
C37	1300 2.5%					VCM-20-132G		
C38	6000 2.5%						MCE467	
C39	180 N220					*		
C40	.047 250V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C41	4700		SI 4700	D6-472	BYA10D47M	CCD-472	B-247	5HK-D47
C42	4700		SI 4700	D6-472	BYA10D47M	CCD-472	B-247	5HK-D47
C43	30		SI 30	D6-330	L10Q30	CCD-300	GP430	10TS-Q30
C44	4700		SI 4700	D6-472	BYA10D47M	CCD-472	B-247	5HK-D47
C45	3300		SI 3300	D6-332	BYA10D33	CCD-332	B-233	5HK-D33

FM RF SUBCHASSIS



FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C46	4700		SI 4700	D6-472	BYA10D47M	CCD-472	B-247	5HK-D47
C47	.0047 500V		P688N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C48	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C49	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C50	.0047 250V		P488N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C51	100		SI 100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C52	.0047 500V		P688N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C53	.1 250V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C54	.22 250V		P488N-22		CUB4P22	4DP-5-224	GEM-4022	4TM-P22
C55	.047 250V		P488N-047	DD-473	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C56	.01 250V	Note 1						
C57	.0001 500V		P688N-0001	D6-101	CUB6T1	CCD-101	GP-310	6TM-T10
C58	.1 500V		P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P1
C59	.0047 500V		P688N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C60	.01 500V		P688N-01	D6-103	CUB6S1	6DP-2-103	GEM-611	6TM-S10
C61	150		SI 150	D6-151	L10T15	CCD-151	B-315	10TS-T15
C62	470		SI 470	D6-471	BYA10T47	CCD-471	B-347	10TS-T47
C63	.0022 500V 10%		V84C6D22-10%			PM6D22	6DP-1-222	GEM-16222	6TM-D22

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
Note 1. Shielded Unit.
Nordmende Part Number.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA NORDMENDE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1.3meg	½	402.122.14	ABT-71				Volume
B	Shaft			AK-29				
R2	10meg	½	402.000.14					Bass
R3	1meg	½	402.003.14					Treble

NORDMENDE MODEL
Turando (U-148)

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: WORKMAN TV PART No.	REMARKS
R4	1meg			
R5	2200Ω			
R6	1meg			
R7	20K			
R8	1.5meg			
R9	1000Ω			
R10	100Ω			
R11	47K			
R12	33K 1W			
R13	39K 1W			
R14	470K			
R15	1000Ω			
R16	56K 1W			
R17	220K 1W			
R18	220K 1W			
R19	33K			
R20	1meg			
R21	33K			
R22	390Ω			
R23	2200Ω			
R24	100Ω			
R25	220Ω			
R26	10meg			
R27	100K			
R28	680K			
R29	18K 1W			
R30	180Ω 1W			
R31	1500Ω 3W	PW5-1500	5W-SQ-1500	
R32	33K 1W			
R33	18K			
R34	2200Ω			
R35	470K 1W			

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: NORDMENDE PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	NOTES
L1	RF Choke					① Includes 30mmf Cap.
L2	RF Choke	①				② Includes 200Ω Resistor
L3	FM Ant.					③ Wound on 220Ω Resistor
L4	IF Trap					
L5	Cathode Choke	②				
L6	RF Choke	③				
L7	FM RF					
L8	FM Osc.					
L9	RF Choke					
L10	1st FM IF Prim					
L11	1st FM IF Sec.					
L12	460KC IF Trap					
L13	Loopstick	423.014.25				
L14	BC Ant.					
L15	SW 1 Ant.					
L16	SW 2 Ant.					
L17	BC Osc.					
L18	SW 1 Osc.					
L19	SW 2 Osc.					
L20A	2nd FM IF	520.152.24				
B	1st AM IF					
L21A	Ratio Detector	520.025.24				
B	2nd AM IF					

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	REPLACEMENT DATA: NORDMENDE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	240V Tap ⓐ 220V, 130V, 125V, 110V ⓐ .5A	230V ⓐ .070A DC	6.3V ⓐ 2.9A	521.017.13 ①					① Alternate Part # 521.008.23

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	IMPEDANCE: SEC.	REPLACEMENT DATA: NORDMENDE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	5500Ω Tap ⓐ 2%	3-4Ω	522.005.13					

SPEAKER

ITEM No.	TYPE: SIZE	TYPE: FIELD	TYPE: V. C. IMP.	REPLACEMENT DATA: NORDMENDE PART No.	QUAM PART No.	NOTES
SP1	5"x 7"	PM	3-4Ω	470.039.14	57A21	
SP2	Electrostatic			470.000.14		
SP3	Electrostatic			470.000.14		
SP4	Electrostatic			470.000.14		

POWER RECTIFIERS

ITEM No.	RATING: CURRENT (Measured)	REPLACEMENT DATA: NORDMENDE PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.070A	464.010.15 *				* Bridge Type Selenium

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA: NORDMENDE PART No. FUSE	NORDMENDE PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M2		6/10 A 250V						
M3	1½" length #32 wire							

MISCELLANEOUS

ITEM No.	PART NAME	NORDMENDE PART No.	NOTES
M4	Tuner	446.028.14	FM Complete (Includes Tuning Cap Part #446.000.14)
M5	Tuning Cap		AM (2 Gang)
M6	Switch		Pushbutton Type (Includes Off-Phono-BC-SW1-SW2 & FM)
M7	Switch		Pushbutton Type (Includes Speech-Orchestra-Solo)
M8	Switch		Antenna
M9	Switch		Voltage Input Selector

WIRING DATA

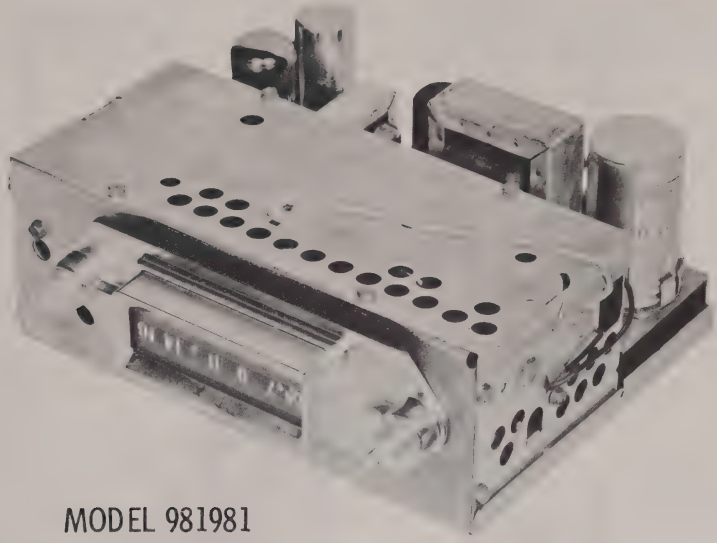
General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8534 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT® Folder with CIRCUITRACE®

OPEL-REKORD MODELS 981946, 981981

OPEL-REKORD MODELS
981946, 981981



MODEL 981981

TRADE NAME	Opel-Rekord Models 981946 (For 1958 Opel); 981981 (For 1959, 1960 Opel)
MANUFACTURER	Delco Radio Div., G. M. Corp., Kokomo, Indiana
TYPE SET	Battery Operated 6 Tube Custom Built Automobile AM Receiver
POWER SUPPLY	6 Volt Storage Battery RATING 4.8 Amp. @6.3Volts DC
TUNING RANGE—BROADCAST	540 — 1600KC

ALIGNMENT INSTRUCTIONS

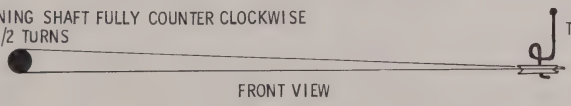
ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1 Thru A5, A9, A10...GENERAL CEMENT #8282, 8606, 8606-L, 9091
WALSCO #2526, 2541, 2542, 2543, 2544
A6, A7, A8.....GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of Converter. Low side to chassis.	262KC (400∿ Mod.)	High end stop.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	Check setting of Oscillator Coil core (A5). Rear of core should be 1 5/8" from mounting end of coil form.					
3.	High side thru 82mmf to antenna receptacle. Low side to chassis.	1615KC	High end stop.	Across voice coil.	A6, A7, A8	Adjust for maximum output.
4.	"	600KC	600KC Signal.	"	A9, A10	"
5.	"	1615KC	1615KC Signal.	"	A7, A8	"
6.	With radio installed in car and antenna fully extended, tune in a weak station near 1000KC and adjust A8 for maximum output.					

DIAL CORD STRINGING



OPEL-REKORD MODELS
981946, 981981

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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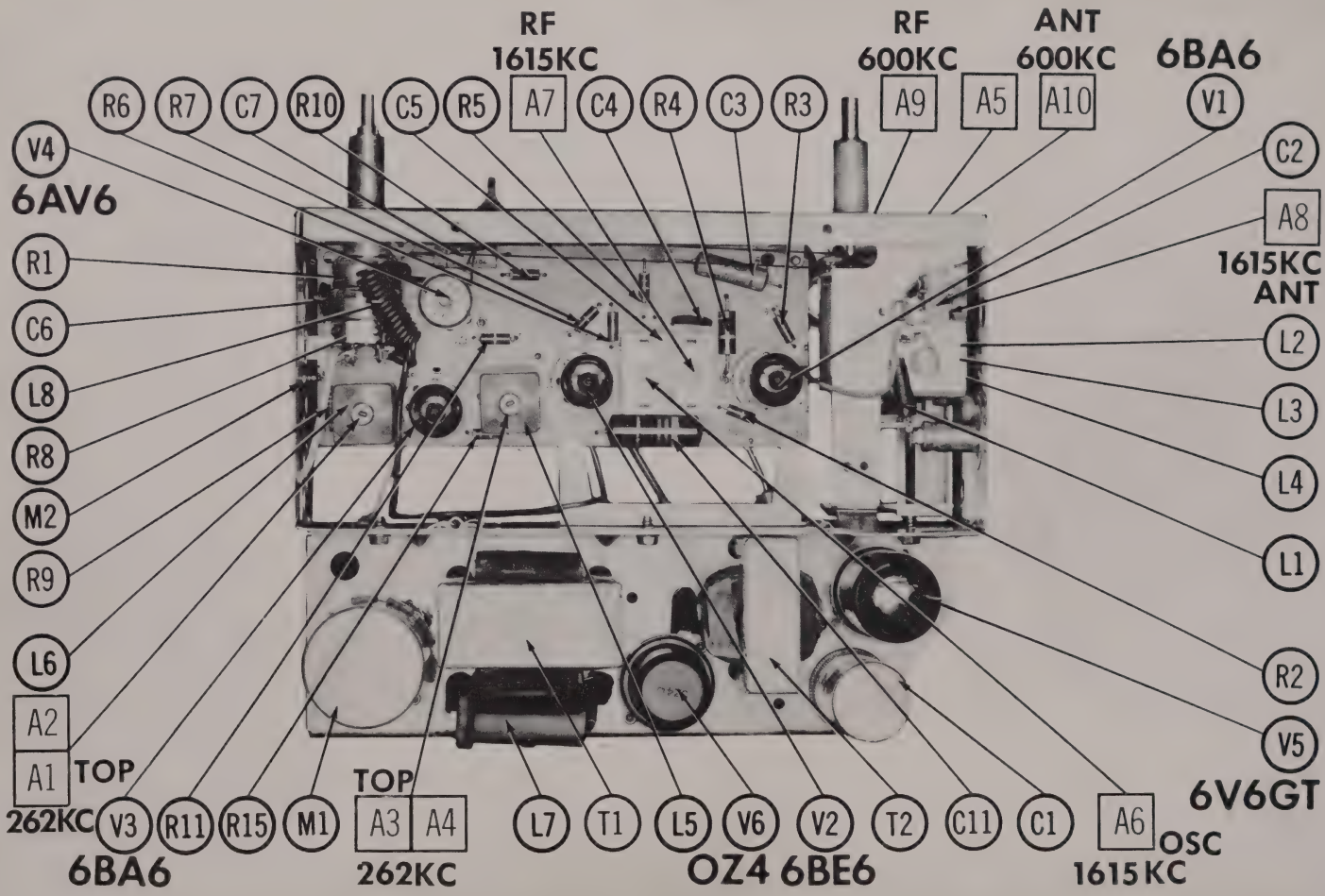
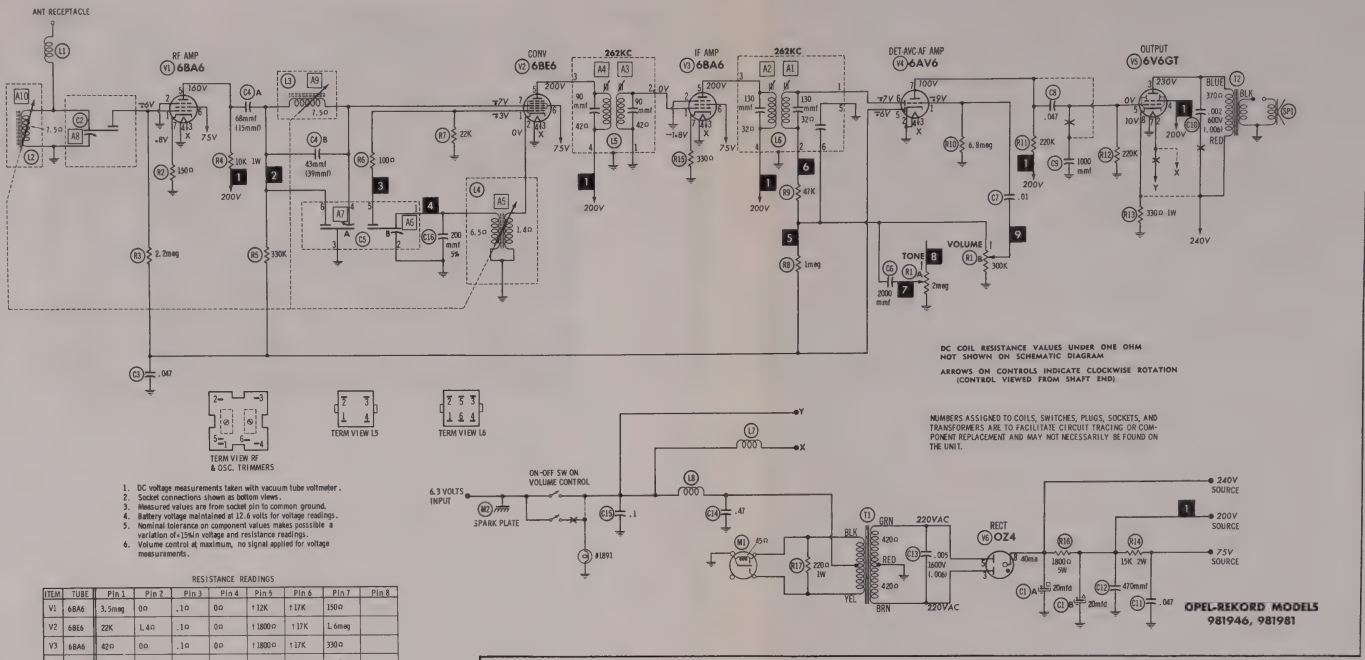
KD495

SET 525 FOLDER 9



CHASSIS-TOP VIEW


ANT RECEPTACLE
RF AMP V1 6BA6
CONV V2 6BE6
262KC
IF AMP V3 6BA6
262KC
DET, AVC, AF AMP V4 6AV6
OUTPUT V5 6V6GT
VOLUME
TONE
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.
TERM VIEW RF & OSC. TRIMMERS
TERM VIEW L5
TERM VIEW L6
6.3 VOLTS INPUT
ON-OFF SW ON VOLUME CONTROL
SPARK PLATE
#1891
RECT V6 OZ4
220VAC
240V SOURCE
200V SOURCE
75V SOURCE

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V1	6BA6	3.5meg	0Ω	.1Ω	0Ω	↑12K	↑17K	150Ω	
V2	6BE6	22K	1.4Ω	.1Ω	0Ω	↑1800Ω	↑17K	1.6meg	
V3	6BA6	42Ω	0Ω	.1Ω	0Ω	↑1800Ω	↑17K	330Ω	
V4	6AV6	6.8meg	0Ω	.1Ω	0Ω	1.3meg	350K	↑220K	
V5	6V6GT	TP	.1Ω	↑370Ω	↑1800Ω	220K	TP	0Ω	330Ω
V6	0Z4	TP	TP	420Ω	NC	420Ω	NC	NC	¶

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
1 MEASURED FROM PIN 8 OF V6. NC NO CONNECTION TP TIE POINT

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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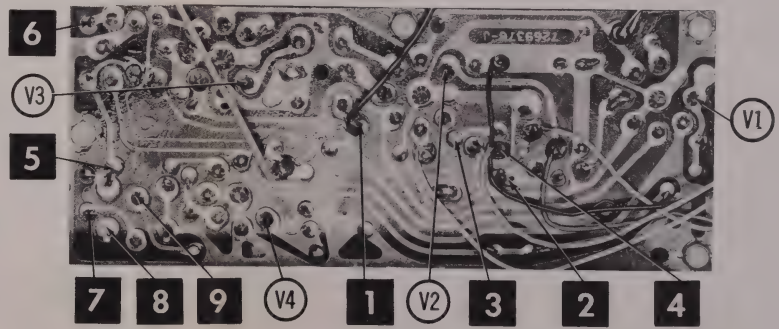
OPEL-REKORD MODELS 981946, 981981



A Howard W. Sams CIRCUITRACE Photo

PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (GENERAL ELECTRIC • RAYTHEON • SYLVANIA)
V1	RF Amplifier	6BA6
V2	Converter	6BE6
V3	IF Amplifier	6BA6
V4	Det.-AVC-AF Amp.	6AV6
V5	Output	6V6GT
V6	Rectifier	OZ4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA DELCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	■20	400	6309	AFH2-43	B0380	FP231.3	TMD-2470	TVL-2753	
B	▲20	400							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2		#7270434						
C3	.047 75V		P288N-047	DD-503	CUB2S47	1DP-2-473	GEM-4147	2TM-S47
C4A	68	(15) †	NPO-D1 68	TCZ-68	C10Q68C	CCTO-680	CNO-468	10TCC-Q68
B	43	(39) †		TCZ-43	C10Q43C	CM-19B-430K		MS-443
C5A		#7268828						
B								
C6	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C7	.01 500V		P688N-01	D6-103	CUB6S1	6DP-2-103	GEM-611	6TM-S10
C8	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C9	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C10	.002 600V	(.006) †	P688N-002	D6-202	CUB6D2	6DP-1-202	GEM-622	6TM-D20
C11	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C12	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C13	.005 1600V	(.006) †	P1684CM-005	DD16-502	CUB16D5	16DP-2-502	GEM-1625	MB-D5
C14	.47 100V		P288N-47		CUB2P47	1DP-4-474	GEM-2047	2TM-P47
C15	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C16	200 5%		1469-0002	TCZ-200	22R5T2	CM-19B-201J	CNO-320	MS-32

Delco Part Number.
† Alternate Value.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA DELCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	2meg		1221113	CD-58-B		5550		Tone
B	300K			Not Req.		Not Req.		Volume
C	Switch			Not Req.		Not Req.		Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	REPLACEMENT DATA WORKMAN TV PART No.	REMARKS
R2	150Ω			
R3	2.2meg			
R4	10K 1W			
R5	330K			
R6	100Ω			
R7	22K			
R8	1meg			
R9	47K			

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	REPLACEMENT DATA WORKMAN TV PART No.	REMARKS
R10	6.8meg			
R11	220K			
R12	220K			
R13	330Ω 1W			
R14	15K 2W			
R15	330Ω			
R16	1800Ω 5W	PW5-1800Ω	5W-SQ-1800Ω	
R17	220Ω 1W			

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA DELCO PART No.	REPLACEMENT DATA Merit PART No.	REPLACEMENT DATA Miller PART No.	REPLACEMENT DATA Stancor PART No.	NOTES
L1	RF Choke(6.2uh)	7255738	BC-565	4610	RTC-8520	
L2	Ant.	1221138				
L3	RF	1221148				
L4	Osc.	1221150				
L5	Input IF	1220990	BC-344	13-PH1	RTC-8644	
L6	Output IF	1220992	BC-346	13-PH6	RTC-8645	
L7	Hash Choke	1221077		7825-8		
L8	Fil. Choke	1217846		9340-02		

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (VIBRATOR)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	DELCO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	6VCT Ⓐ 3A	440VCT Ⓐ .040A		7272610					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	DELCO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	6000Ω	3-4Ω	6062	A-3019①	A-4431	26S49①	S-5Z①	① Use Original Frame.

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	DELCO PART No.	QUAM PART No.	
SP1	4"x 8"	PM	3-4Ω	7272560	48A2	

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA				NOTES
				DELCO PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	RADIART PART No.	
M1	Interruptor	6	115∿	8542	5300	1601	5300	

MISCELLANEOUS

ITEM No.	PART NAME	DELCO PART No.	NOTES
M2	Spark Plate	7271769	

CABINETS & CABINET PARTS

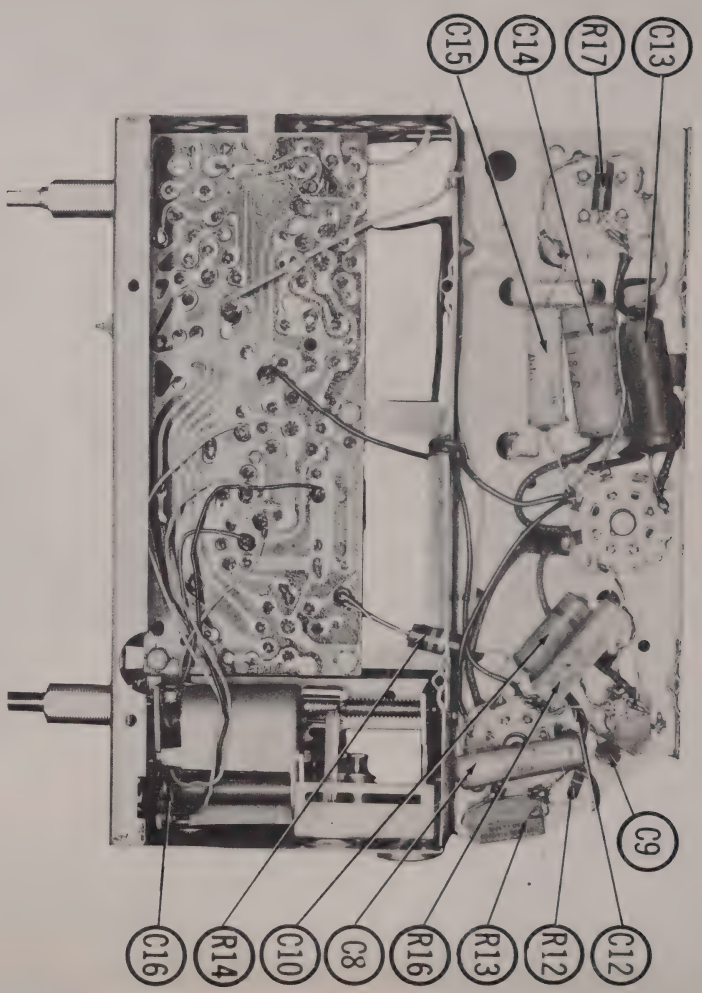
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	1170296	Tuning, Volume
Knob	7263890	Tone
Knob	7263886	Dummy
Dial Pointer	7270447	

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
Bonding Strap	Use BELDEN No. 8661

CHASSIS—BOTTOM VIEW



PHOTOFACT® Folder with CIRCUITRACE®

**PHILCO MODEL
T-74-124**

PHILCO MODEL
T-74-124

PHILCO MODEL
T-74-124

TRADE NAME	Philco Model T-74-124		
MANUFACTURER	Philco Corp., Tioga & C Streets, Philadelphia, Pa.		
TYPE SET	Battery Operated Transistorized Portable AM Receiver		
POWER SUPPLY	6 Volts DC	RATING	10MA@ 6 Volts DC (No Signal, Min. Volume)
TUNING RANGE	BROADCAST 535 - 1620KC		25MA@ 6 Volts DC (Signal, Normal Volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:
A1 thru A4 ..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532
A5 ..... GENERAL CEMENT #8282, 8606, 8606L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545
A6, A7 ..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to antenna stator lug of tuning gang. Low side to chassis.	455KC (400~ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.	Loop	600KC	600KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	1620KC	Tuning gang fully open	"	A6	"
4.	"	1400KC	1400KC	"	A7	Adjust for maximum output. Repeat steps 2, 3 and 4.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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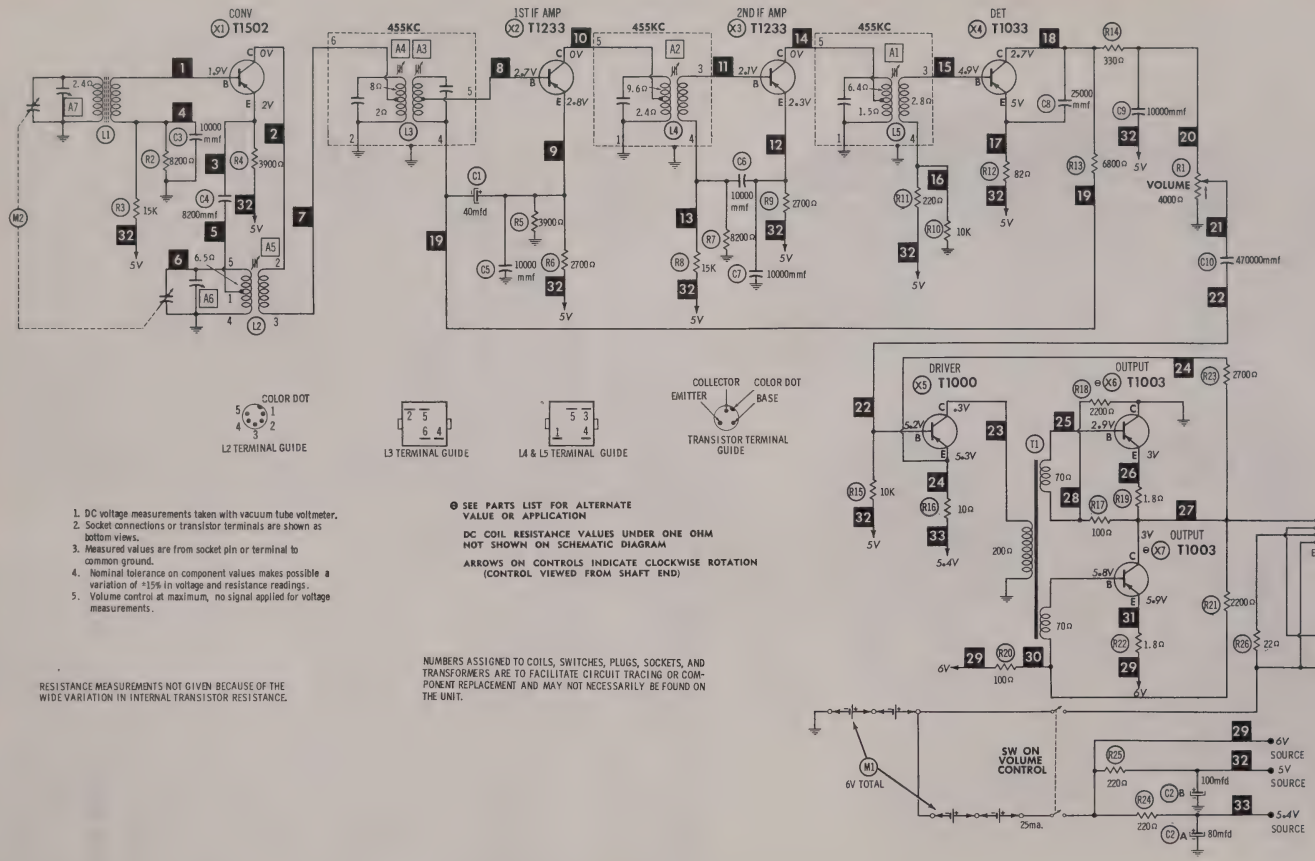
KF337

SET 525 FOLDER 10



1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

❶ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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PHILCO MODEL T-74-124

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	T1502	Converter				PNP
X2	T1233	1st IF Amplifier				PNP
X3	T1233	2nd IF Amplifier				PNP
X4	T1033	Detector		2N486		PNP
X5	T1000	Driver				PNP
X6	T1003 ①	Output	2N270	2N632		PNP } Matched
X7	T1003 ①	Output	2N270	2N632		PNP } Pair

① Alternate Type T1007.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	PHILCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	40	6	30-2588-3	PTT-6040	NLW40-6	TT6X40	ML40-6	TE-1095	
C2A	80	6	30-2602-1	BCDI0X8080	ECPAN7	TT6X80	ML100-6	VL-2350	
B	100	6				TT6X100	ML100-6		

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	10000		BPD-01	DD-103	H-05S1	CCD-103	TA-110	TG-S10
C4	8200			DD-822		CCD-822	B-282	
C5	10000		BPD-01	DD-103	H-05S1	CCD-103	TA-110	TG-S10
C6	10000		BPD-01	DD-103	H-05S1	CCD-103	TA-110	TG-S10
C7	10000		BPD-01	DD-103	H-05S1	CCD-103	TA-110	TG-S10
C8	25000				H-05S25		TA-125	TG-S25
C9	10000		BPD-01	DD-103	H-05S1	CCD-103	TA-110	TG-S10
C10	470000 10V	#30-1279-4		UKI0-474				

Philco Part Number

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	PHILCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	4000Ω	½	33-5575-25					Volume and Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	8200Ω				R15	10K			
R3	15K				R16	10Ω			
R4	3900Ω				R17	100Ω			
R5	3900Ω				R18	2200Ω			
R6	2700Ω				R19	1.8Ω			
R7	8200Ω				R20	100Ω			
R8	15K				R21	2200Ω			
R9	2700Ω				R22	1.8Ω			
R10	10K				R23	2700Ω			
R11	220Ω				R24	220Ω			
R12	82Ω				R25	220Ω			
R13	6800Ω				R26	22Ω			
R14	330Ω								

PRINTED BOARD

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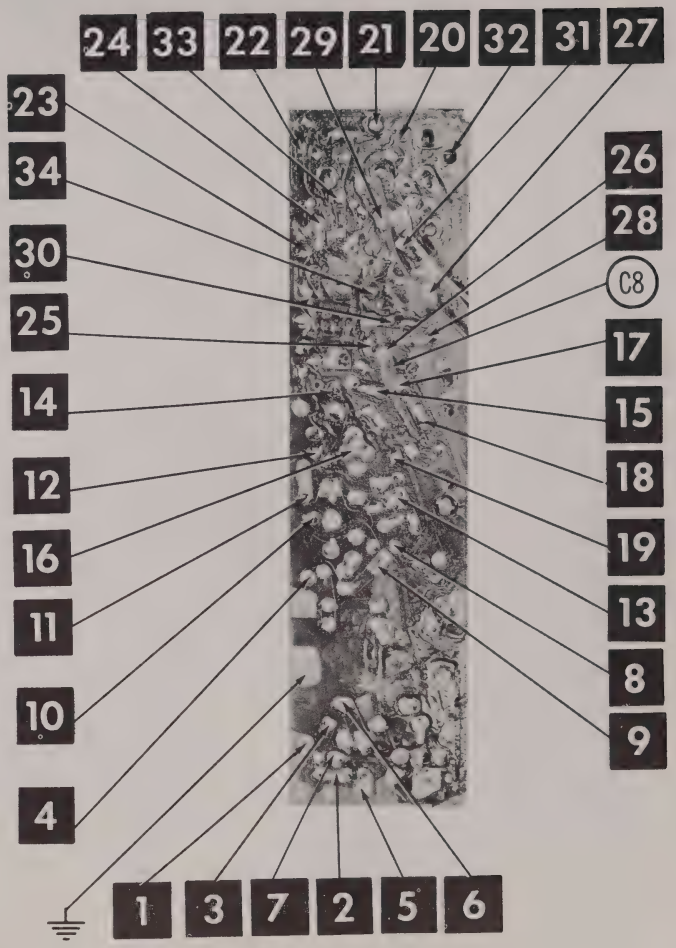


PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		PHILCO PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	Loopstick	32-4668-11					
L2	Osc.	32-4669-2					
L3	1st IF	32-4738-1					
L4	2nd IF	32-4738-2					
L5	3rd IF	32-4738-3					

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	PHILCO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2	1 SEC. 2 1	32-8950-1					

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	PHILCO PART No.	QUAM PART No.	
SP1	3½"	PM	18-20Ω	36-1652-7	3A05Z20	

BATTERIES

ITEM No.	VOLTAGE	PHILCO PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.5V	P-903 *		130 *		635 *		M-14R *	* 4 Required

MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
M2	Tuning Cap. Printed Board Earphone	31-2790-9 54-6574-4 326-8007-1	2 Gang

CABINETS & CABINET PARTS

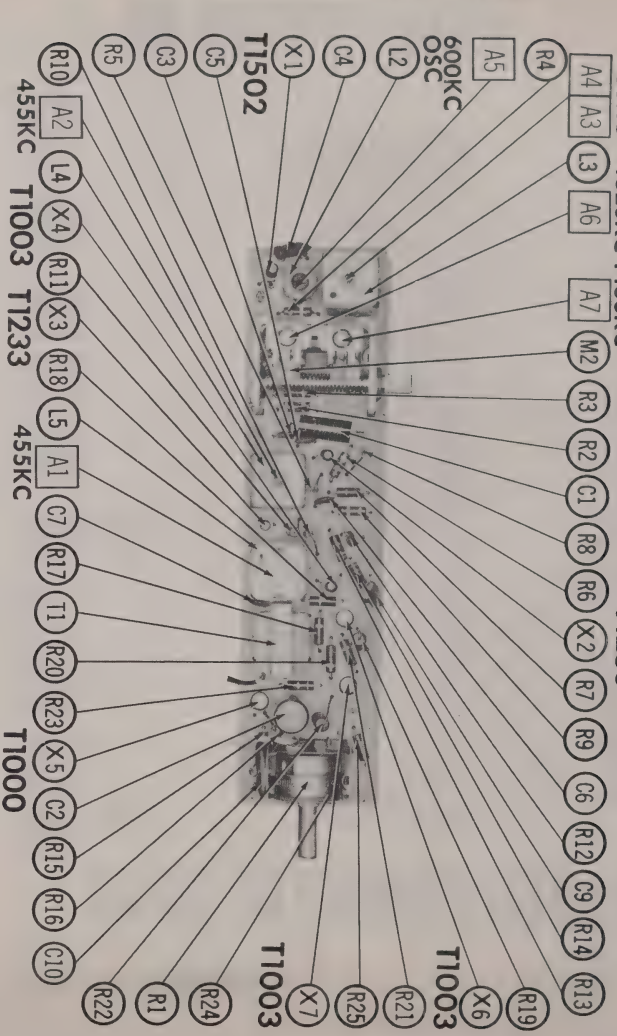
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	424-8089	Tuning
Knob	424-8090	Volume
Cabinet	54-5719-2	Front
Cabinet	51-0125-2	Back
Handle	54-5725-1	Strap

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—TOP VIEW

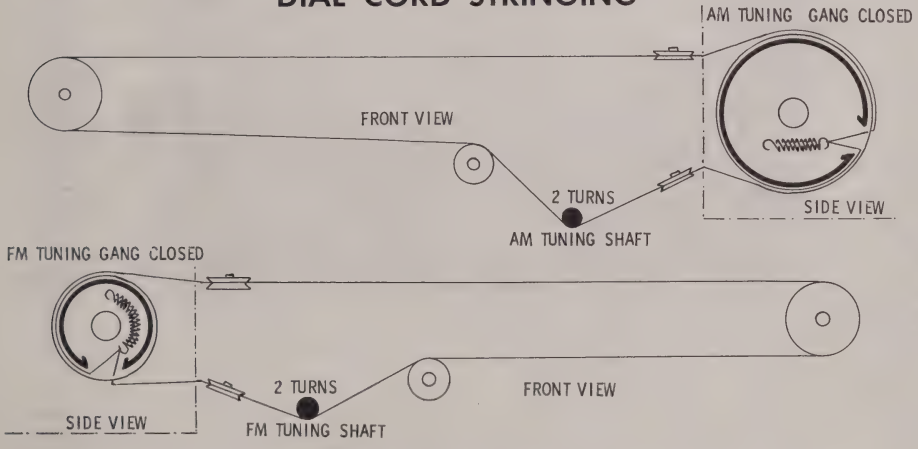


PHOTOFACT® Folder with CIRCUITRACE®

PILOT MODEL 602

TRADE NAME	Pilot Model 602		
MANUFACTURER	Pilot Radio Corp., 37-06 36th Street, Long Island City 1, N. Y.		
TYPE SET	AC Operated 17 Tube FM-AM Receiver With Stereo Amplifier		
POWER SUPPLY	105 – 120 Volts AC, 60 Cycles	RATING	130 Watts, 1.3 Amp. @117 Volts AC
TUNING RANGE—BROADCAST	535 – 1720KC	FREQ. MOD.	88 – 108MC

DIAL CORD STRINGING



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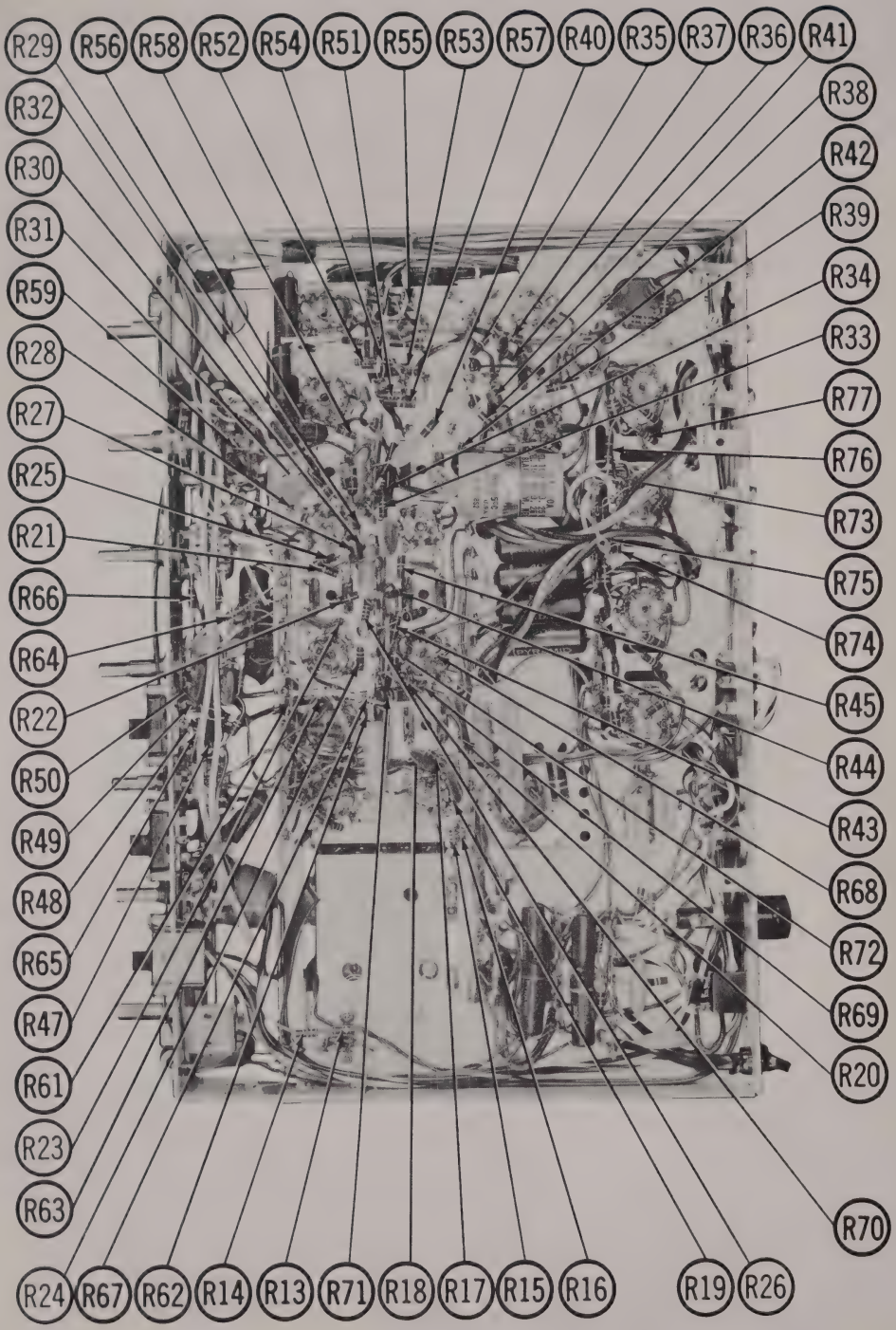
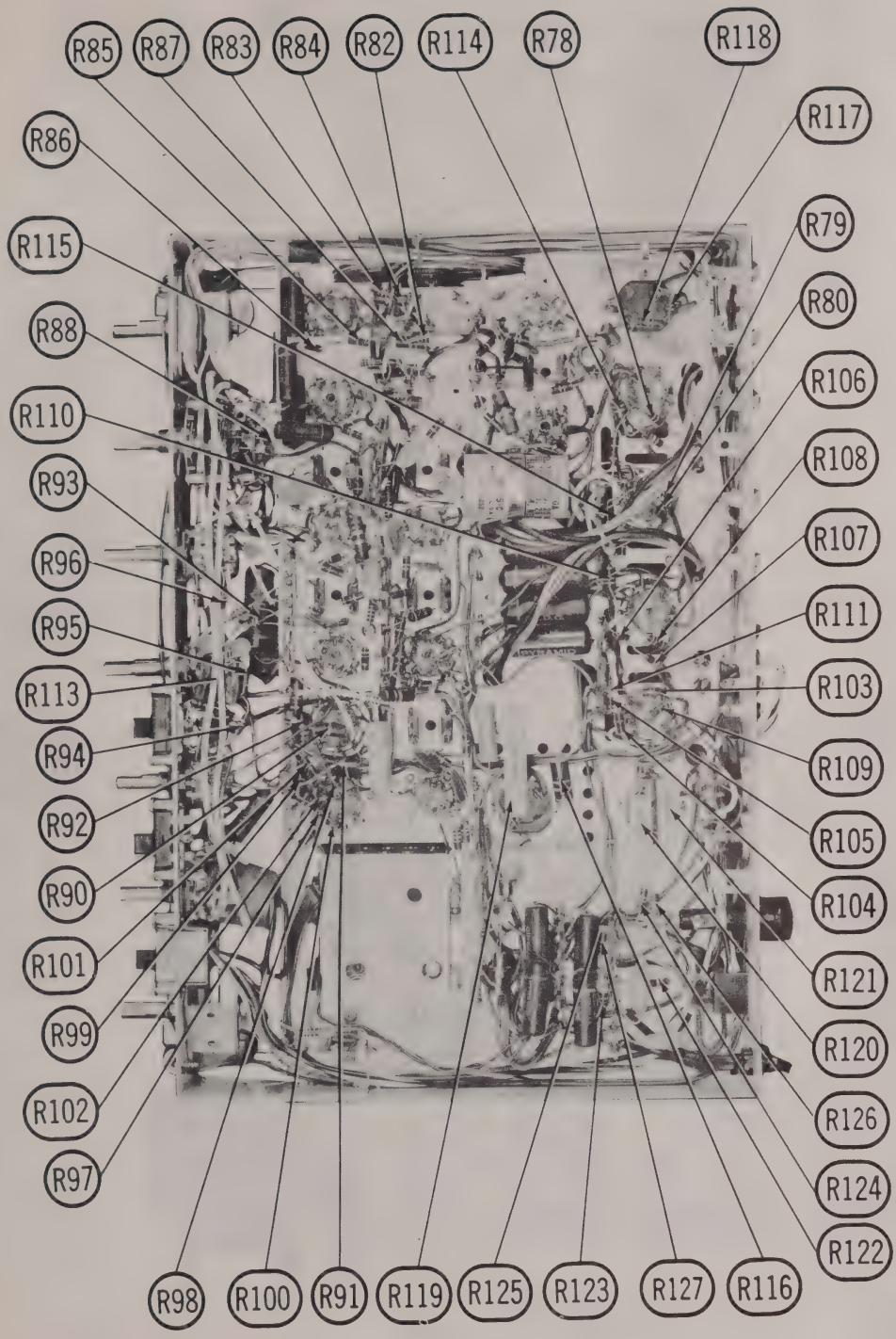
KK329

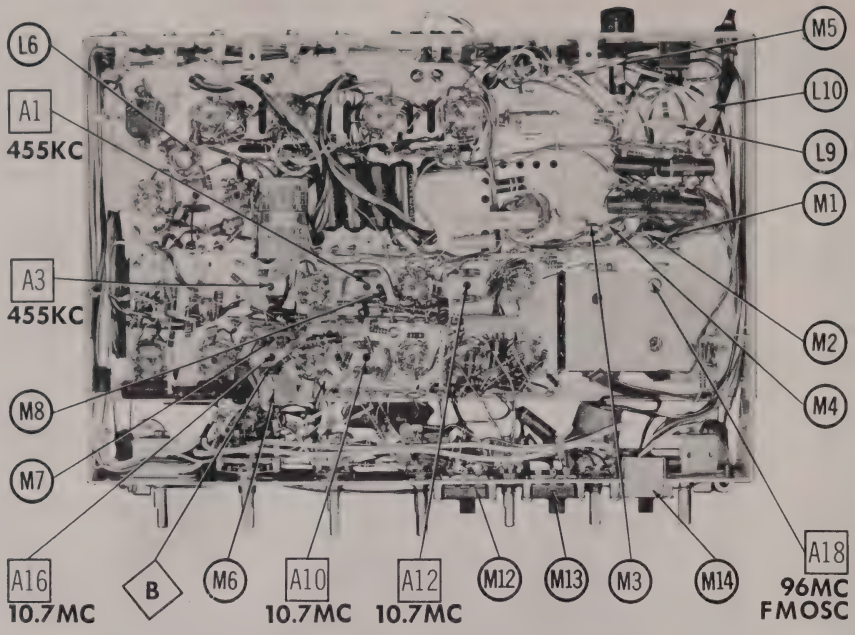
PILOT MODEL 602
PILOT MODEL 602
SET 525 FOLDER 11



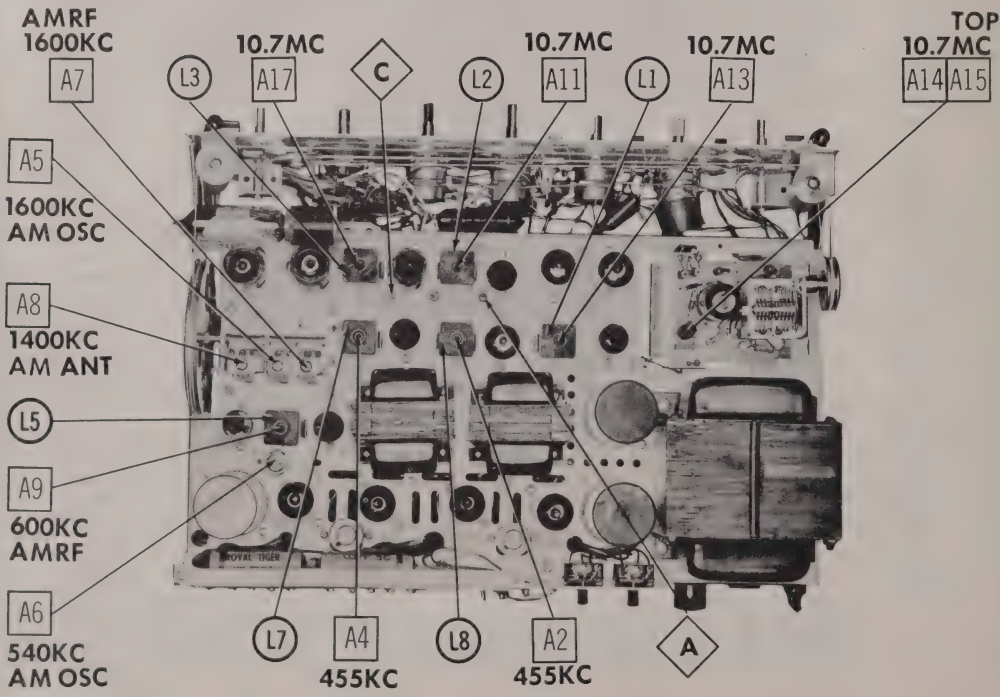
CHASSIS-BOTTOM VIEW- RESISTOR IDENTIFICATION



CHASSIS-BOTTOM VIEW-RESISTOR IDENTIFICATION



CHASSIS BOTTOM VIEW-ALIGNMENT, INDUCTOR & MISC. IDENT.



CHASSIS TOP VIEW-ALIGNMENT & INDUCTOR IDENT.

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:
A1 thru A4, A9 thru A13, A16 & A17. . GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545
A5, A7, A8, A18. . . . . GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520
A6. . . . . GENERAL CEMENT #5003, 8271, 8275, 8276, 8609, 8721, 8722, 9150, 9298
WALSCO #2516, 2518, 2519
A14, A15. . . . . GENERAL CEMENT #8282, 8606, 8606-L, 9091
WALSCO #2526, 2541, 2542, 2543, 2544

AM ALIGNMENT – SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of AM Converter. Low side to chassis.	455KC (400~ Mod.)	(AM) Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	"	1600KC	1600KC	"	A5	"
3.	"	540KC	540KC	"	A6	"
4.	Loop	1400KC	1400KC	"	A7, A8	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
5.	"	600KC	600KC	"	A9	"

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM—SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
6.	Across FM antenna terminals.	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe to point (A). Common to chassis.	A10, A11, A12, A13, A14, A15	Adjust for maximum deflection.
7.	"	"	"	DC probe thru 1meg to point (B). Common to chassis.	A16	"
8.	"	"	"	DC probe to point (C). Common to chassis.	A17	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE—SELECTOR IN FM POSITION

Use frequency modulated signal with 60~ modulation and 450KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
6.	Across FM antenna terminals.	10.7MC (450KC Swp)	(FM) Point of non-interference.	Vert. amp. to point (A). Low side to chassis.	A10, A11, A12, A13, A14, A15	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
7.	"	"	"	Vert. amp. thru 47K to point (B). Low side to chassis.	A16	"
8.	"	"	"	Vert. amp. to point (C). Low side to chassis.	A17	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A16 for maximum amplitude and straightness of cross-over lines.

FM RF ALIGNMENT – SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
9.	Across FM antenna terminals.	96MC	(FM) 96MC	DC probe to point (A). Common to chassis.	A18	Adjust for maximum deflection.

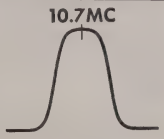


FIG. 1

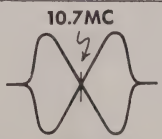
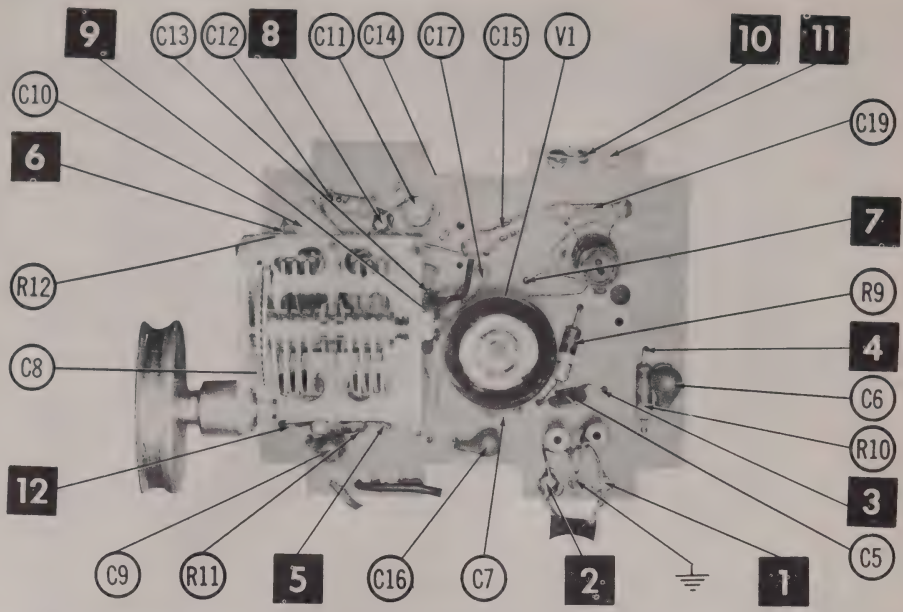


FIG. 2



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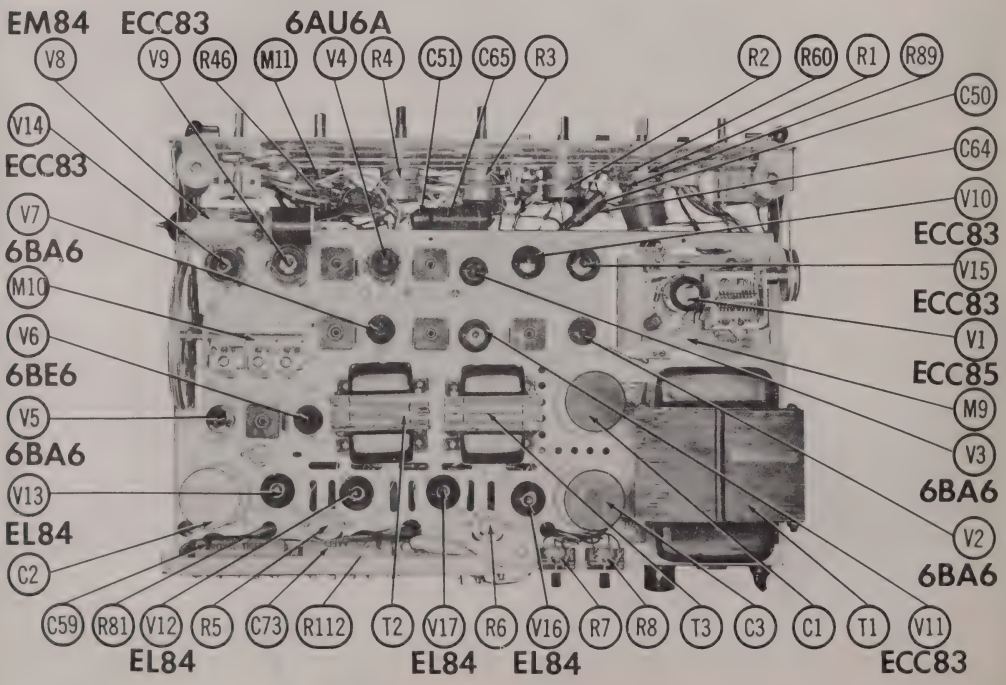
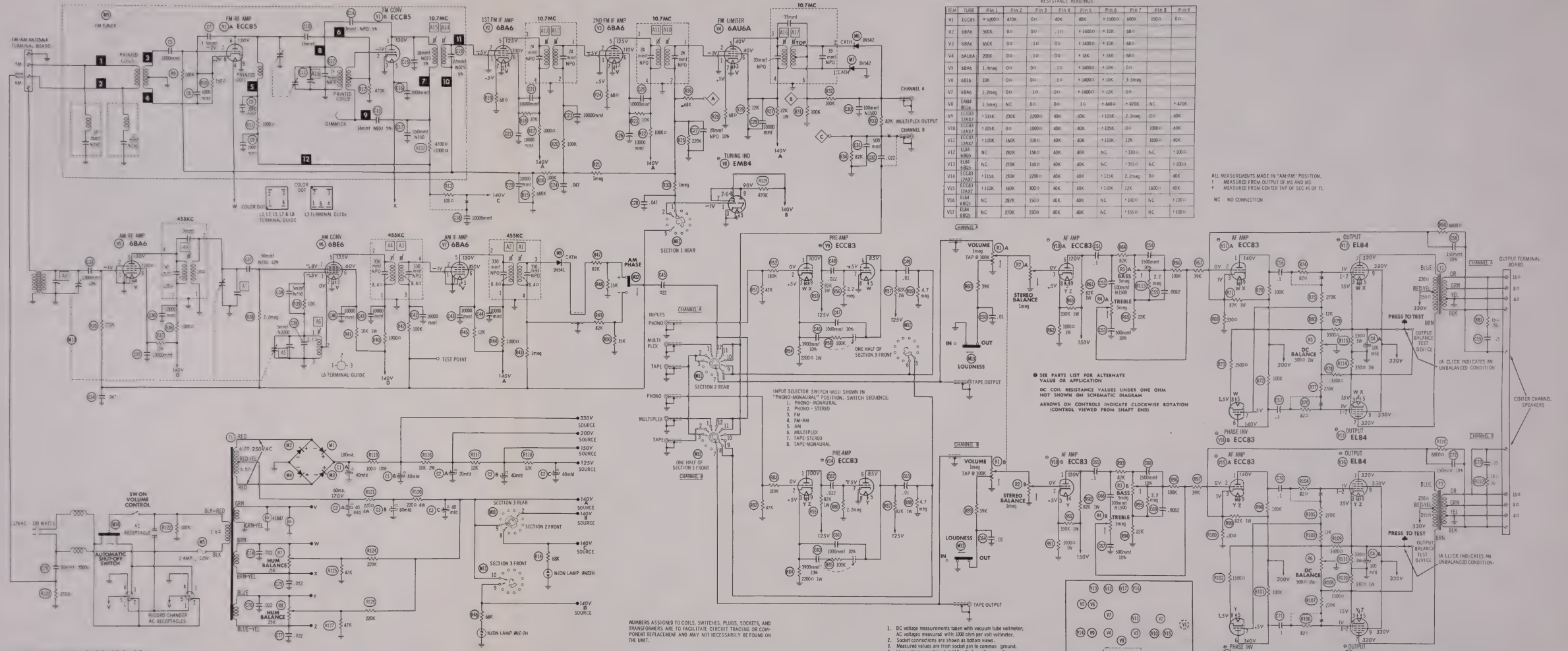
FM RF SUBCHASSIS

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



CHASSIS TOP VIEW



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC85	†3200Ω	470K	0Ω	40K	40K	†1500Ω	600K	150Ω	0Ω
V2	6BA6	500K	0Ω	0Ω	.1Ω	†1400Ω	†10K	68Ω		
V3	6BA6	650K	0Ω	.1Ω	0Ω	†1400Ω	†10K	68Ω		
V4	6AU6A	200K	0Ω	.1Ω	0Ω	†18K	†18K	68Ω		
V5	6BA6	1.4meg	0Ω	0Ω	.1Ω	†1400Ω	†10K	0Ω		
V6	6BE6	10K	0Ω	0Ω	.1Ω	†1400Ω	†10K	3.3meg		
V7	6BA6	1.2meg	0Ω	.1Ω	0Ω	†1400Ω	†12K	0Ω		
V8	EM84 8FG6	1.5meg	NC	0Ω	0Ω	.1Ω	†440Ω	†470K	NC	†470K
V9	ECC83 12AX7	†115K	230K	2200Ω	40K	40K	†115K	2.2meg	0Ω	40K
V10	ECC83 12AX7	†105K	0Ω	1000Ω	40K	40K	†105K	0Ω	1000Ω	40K
V11	ECC83 12AX7	†110K	160K	330Ω	40K	40K	†110K	12K	1600Ω	40K
V12	EL84 6BQ5	NC	282K	150Ω	40K	40K	NC	†330Ω	NC	†100Ω
V13	EL84 6BQ5	NC	270K	150Ω	40K	40K	NC	†355Ω	NC	†100Ω
V14	ECC83 12AX7	†115K	230K	2200Ω	40K	40K	†115K	2.2meg	0Ω	40K
V15	ECC83 12AX7	†110K	160K	300Ω	40K	40K	†110K	12K	1600Ω	40K
V16	EL84 6BQ5	NC	282K	150Ω	40K	40K	NC	†330Ω	NC	†100Ω
V17	EL84 6BQ5	NC	270K	150Ω	40K	40K	NC	†355Ω	NC	†100Ω

ALL MEASUREMENTS MADE IN "AM-FM" POSITION.
† MEASURED FROM OUTPUT OF M1 AND M3.
+ MEASURED FROM CENTER TAP OF SEC #1 OF T1.

NC NO CONNECTION

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

(A CLICK INDICATES AN UNBALANCED CONDITION)

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter, AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

CIRCUITRACE

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PILOT MODEL 602

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (GENERAL ELECTRIC • RAYTHEON • SYLVANIA •)
V1	FM RF Amp. -FM Conv.	ECC85
V2	1st FM IF Amplifier	6BA6
V3	2nd FM IF Amplifier	6BA6
V4	FM Limiter	6AU6A
V5	AM RF Amplifier	6BA6
V6	AM Converter	6BE6
V7	AM IF Amplifier	6BA6
V8	Tuning Indicator	EM84/6FG6
V9	Channel A Preamp.	ECC83/12AX7 (7025) *
V10	Channel A AF Amp. - Channel B AF Amp.	ECC83/12AX7
V11	Channel A AF Amp. - Phase Inverter	ECC83/12AX7
V12	Channel A Output	EL84/6BQ5
V13	Channel A Output	EL84/6BQ5
V14	Channel B Preamp.	ECC83/12AX7 (7025) *
V15	Channel B AF Amp. - Phase Inverter	ECC83/12AX7
V16	Channel B Output	EL84/6BQ5
V17	Channel B Output	EL84/6BA5

* Alternate

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA PILOT PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	400	24-124D	AFH3-30-60	C0239	FP149	TMD-2495	TVL-2677	
B	▲80	400				TC78			
C2A	▲20	350	24-174B	AFH3-43-50	D0430	FP376.9	TMT-3745	TVL-3786	
B	■40	350							
C	▲40	350							
C3A	▲40	300	24-1230	AFH3-25-50	C0194	FP326.62	TMD-2325	TVL-3583	
B	■80	250					TD-40-250		
C	▲40	250							
C4A	100	25	24-170A	PRS2245	NLW100-25	TCD2155	TD-100-25	TU-2120	
B	100	25			NLW100-25		TD-100-25		

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C6	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C7	3.5							
C8	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C9	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C10	15							
C11								
C12	15 N470					*		
C13	14 N033 5%					*		
C14	3 NPO 5%		NPO-SI 3.3	TCZ-3R3	C10V3C	CCTO-3R3	CNO-533	10TCC-V33
C15	18 N033 5%					*		
C16	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C17	150 N750		N750-SI 150	TCN-150	C10T15U	CCTN-151	CN7-315	10TCU-T15
C18	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C19	22 N075 5%					*		
C20	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C21	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C22	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C23	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C24	.047 100V		P288N-047	DD-503	CUB2S47	1DP-2-473	GEM-4147	2TM-S47
C25	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-210	5HK-S10
C26	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-210	5HK-S10
C27	20 NPO 10%		NPO-DI 20	DTZ-20	C10Q2C	CCTO-200	CNO-422	10TCC-Q20

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C28	.047 100V		P288N-047	DD-503	CUB2S47	1DP-2-473	GEM-4147	2TM-S47
C29	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C30	100 N1500			TCL-100		*		
C31	500 10%		DI-500	DD-501	5R5T5	CCD-501	GP350	10TS-T50
C32	.022 400V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C33	1000 10%		DI-1000	DD-102	5R5D1	CCD-102	B-210	10TS-D10
C34	.047 100V		P288N-047	DD-503	CUB2S47	1DP-2-473	GEM-4147	2TM-S47
C35	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C36	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C37	30 N750 10%		N750-DI 33	TCN-30	C10Q3U	CCTN-330	CN7-433	10TCU-Q33
C38	5 N750			DTN-5	C10V5U	CCTN-050	CN7-550	10TCU-V50
C39	5 N2200					*		
C40	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C41	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C42	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C43	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C44	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C45	.022 400V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C46	3900 10%		DI-4000		DPMS6D39	CCD-392	JL-239	10TS-D39
C47	1000 10%		DI-1000	DD-102	PM6D1	CCD-102	GP210	10TS-D10
C48	.022 400V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C49	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C50	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C51	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C52	100 N1500			TCL-100		*		
C53	500 10%		DI-500	DD-501	5R5T5	CCD-501	GP350	10TS-T50
C54	1500 10%		DI-1500	DD-152	PM6D15	CCD-152	GP215	10TS-D15
C55	.0082 200V		P484CM-0082	DD-822	DPMS6D82	6DP-2-822	GEM-16282	6PS-D82
C56	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C57	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C58	150 10%		DI-150	DD-151	L10T15	CCD-151	GP315	10TS-T15
C59	.25 200V		P288N-25		CUB2P25	2DP-4-254	GEM-2025	2TM-P25
C60	3900 10%		DI-4000		DPMS6D39	CCD-392	JL-239	10TS-D39
C61	1000 10%		DI-1000	DD-102	PM6D1	CCD-102	GP210	10TS-D10
C62	.022 400V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C63	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C64	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C65	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C66	100 N1500			TCL-100		*		
C67	500 10%		DI-500	DD-501	5R5T5	CCD-501	GP350	10TS-T50
C68	1500 10%		DI-1500	DD-152	PM6D15	CCD-152	GP215	10TS-D15
C69	.0082 200V		P484CM-0082	DD-822	DPMS6D82	6DP-2-822	GEM-16282	6PS-D82
C70	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C71	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C72	150 10%		DI-150	DD-151	L10T15	CCD-151	GP350	10TS-T15
C73	.25 200V		P288N-25		CUB2P25	2DP-4-254	GEM-2025	2TM-P25
C74	.022 400V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C75	.022 400V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C76	.022 400V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C77	.022 400V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C78	30 2000V		HVD-30-33	DD30-300	HVA20Q33	3CCD-330	2DY-433	20GAB-Q3

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	PILOT PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	1meg	½	36-74				FA16T35	Volume, Channel A
	300K Tap							
B	1meg	½					RU16T35	Volume, Channel B
	300K Tap							
C	Shaft						CS3500	
D	Switch						US41	Power Off-On
R2A	1meg	½	39-57				FA16A	Stereo Balance, Channel A
B	1meg	½					RU16R	Stereo Balance, Channel B
C	Shaft						CS3500	
R3A	5meg	½	37-41					Bass, Channel A
B	5meg	½				† QJ-1342R	■UE3854	Bass, Channel B
C	Shaft							
R4A	5meg	½	37-41					Treble, Channel A
B	5meg	½				† QJ-1342R	■UE3854	Treble, Channel B
C	Shaft							
R5	500Ω	2(WW)	39-62					D.C. Balance, Channel A
R6	500Ω	2(WW)	39-62					D.C. Balance, Channel B
R7A	25K	½	39-44	TT-26	B47-25K-S	Bll-120	TA253L	Hum Balance, Channel A
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	
R8A	25K	½	39-44	TT-26	B47-25K-S	Bll-120	TA253L	Hum Balance, Channel B
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	

† "CONCENTRIKIT" equivalent: K-6 Kit with base elements and shafts: Bl3-141, Pl7-028 (Panel)
(Not available as a factory assembled unit). Bl3-141, Rl-108 (Rear)

■ "STA-LOC" equivalent: FA56A, RU56A, OS812, IS1312.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R9	100K				R42	100K			
R10	150Ω				R43	1meg			
R11	1000Ω				R44	1000Ω			
R12	470K				R45	12K			
R13	100Ω				R46	68K			
R14	68K				R47	82K			
R15	680K				R48	15K			
R16	100K				R49	82K			
R17	1000Ω				R50	15K			
R18	10K				R51	47K			
R19	68K				R52	180K			
R20	100K				R53	82K 1W			
R21	1meg				R54	2200Ω 1W			
R22	1000Ω				R55	82K 1W			
R23	10K				R56	2.2meg			
R24	68Ω				R57	82K 1W			
R25	220K				R58	100K			
R26	68K				R59	4.7meg			
R27	22K 1W				R60	39K			
R28	12K				R61	82K 1W			
R29	68Ω				R62	1000Ω 1W			
R30	1meg				R63	330K 1W			
R31	100K				R64	82K			
R32	100K				R65	22K			
R33	82K				R66	100K			
R34	82K				R67	39K			
R35	270K				R68	6800Ω			
R36	1000Ω				R69	330Ω			
R37	10K				R70	100K			
R38	2.2meg				R71	82K 1W			
R39	10K				R72	100K			
R40	1000Ω				R73	1500Ω			
R41	10K 1W				R74	82Ω			

RESISTORS (cont)

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R75	270K				R103	12K			
R76	82Ω				R104	82Ω			
R77	270K				R105	270K			
R78	3300Ω				R106	82Ω			
R79	3300Ω				R107	270K			
R80	12K				R108	3300Ω			
R81	18Ω 2W				R109	3300Ω			
R82	47K				R110	330Ω 1W			
R83	180K				R111	330Ω 1W			
R84	2200Ω 1W				R112	18Ω 1W			
R85	100K				R113	2.2meg			
R86	2.2meg				R114	330Ω 1W			
R87	82K 1W				R115	330Ω 1W			
R88	4.7meg				R116	10K 2W			
R89	39K				R117	12K			
R90	82K 1W				R118	12K			
R91	1000Ω 1W				R119	100Ω 10W	PW10-100	10W-SQ-100	
R92	330K 1W				R120	220Ω 4W	PW5-220	5W-SQ-220	
R93	82K				R121	220Ω 4W	PW5-220	5W-SQ-220	
R94	22K				R122	100K			
R95	2.2meg				R123	270Ω			
R96	100K				R124	220K			
R97	39K				R125	47K			
R98	100K				R126	220K			
R99	82K 1W				R127	47K			
R100	330Ω				R128	6800Ω			
R101	100K				R129	470K			
R102	1500Ω				R130	4700Ω			(1000Ω) *

* Alternate Value.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		PILOT PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	
L1	2nd FM IF	273-151	FM-254	1463	RTC-8599	
L2	3rd FM IF	273-151	FM-254	1463	RTC-8599	
L3	Discriminator	279-78	FM-253	1464	RTC-8665	
L4	Loopstick	270-58	BC-419	705-A		
L5	AM RF	71-49				
L6	AM Osc.	72-84	BC-393	70-OSC	RTC-8647	
L7	1st AM IF	273-129	BC-352	12-C1	RTC-8632	
L8	2nd AM IF	273-129	BC-353	12-C2	RTC-8633	
L9	Line Choke	75-19	BC-562	4604	RTC-8516	
L10	Line Choke	75-19	BC-562	4604	RTC-8516	

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	PILOT PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	117V@ 1.3A	250VCT @. 240A DC	6.3V@ 2.5A	55-76					
	SEC. 3	SEC. 4	SEC. 5						
	6.3V@ 2.4A	6.3V@ 2.4A							

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
			PILOT PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
	PRI.	SEC.						
T2	7500Ω CT	16Ω Tap ⓐ 8Ω, 4Ω	56-61					
T3	7500Ω CT	16Ω Tap ⓐ 8Ω, 4Ω	56-61					

POWER RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	PILOT PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1	.180A	110-629 *	1N1763 *	40H *	SR500 *	* Silicon
M2	.180A	110-629 *	1N1763 *	40H *	SR500 *	
M3	.180A	110-629 *	1N1763 *	40H *	SR500 *	
M4	.180A	110-629 *	1N1763 *	40H *	SR500 *	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			PILOT PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M5	3AG	2A 125V S/B	111-16		313002 (3AG 2A 125V) S/B	342001	MDL 2	HKP

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		PILOT PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M6	1N542			1N295	1N295	FM Det. (Pigtail)
M7	1N542			1N295	1N295	FM Det. (Pigtail)
M8	1N541			1N60	1N60	AM Det. (Pigtail)

MISCELLANEOUS

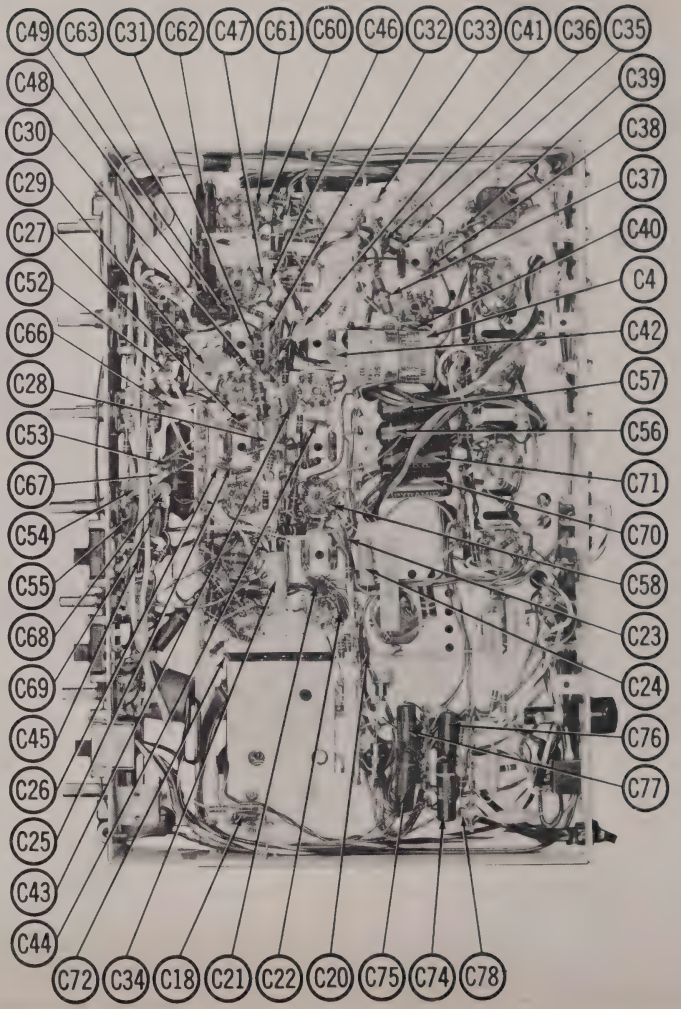
ITEM No.	PART NAME	PILOT PART No.	NOTES
M9	FM Tuner	110-628	Assembly, Complete
M10	Tuning Cap.	26-66	AM, 3 Gang (Ant. 24—48mmf, RF 30—506mmf, Osc. 21—165mmf)
M11	Switch	100-159	Input Selector (Rotary Wafer Type)
M12	Switch	101-29	AM Phase (SPDT Slide Type)
M13	Switch	101-26	Loudness (DPDT Slide Type)
M14	Switch	101-29	Automatic Shut-Off (SPDT Slide Type)

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

CHASSIS—BOTTOM VIEW



PHOTOFACT® Folder

RAULAND
MODEL HF200

RAULAND
MODEL HF200

RAULAND
MODEL HF200

TRADE NAME	Rauland Model HF200		
MANUFACTURER	Rauland-Borg Corp., 3535 W. Addison Street, Chicago 18, Illinois		
TYPE SET	AC Operated 10 Tube FM-AM Tuner		
POWER SUPPLY	110-120 Volts AC, 60 Cycles	RATING	32 Watts, .32 Amp. @ 117 Volts AC
TUNING RANGE	BROADCAST 540-1600KC	FREQ. MOD.	88-108MC

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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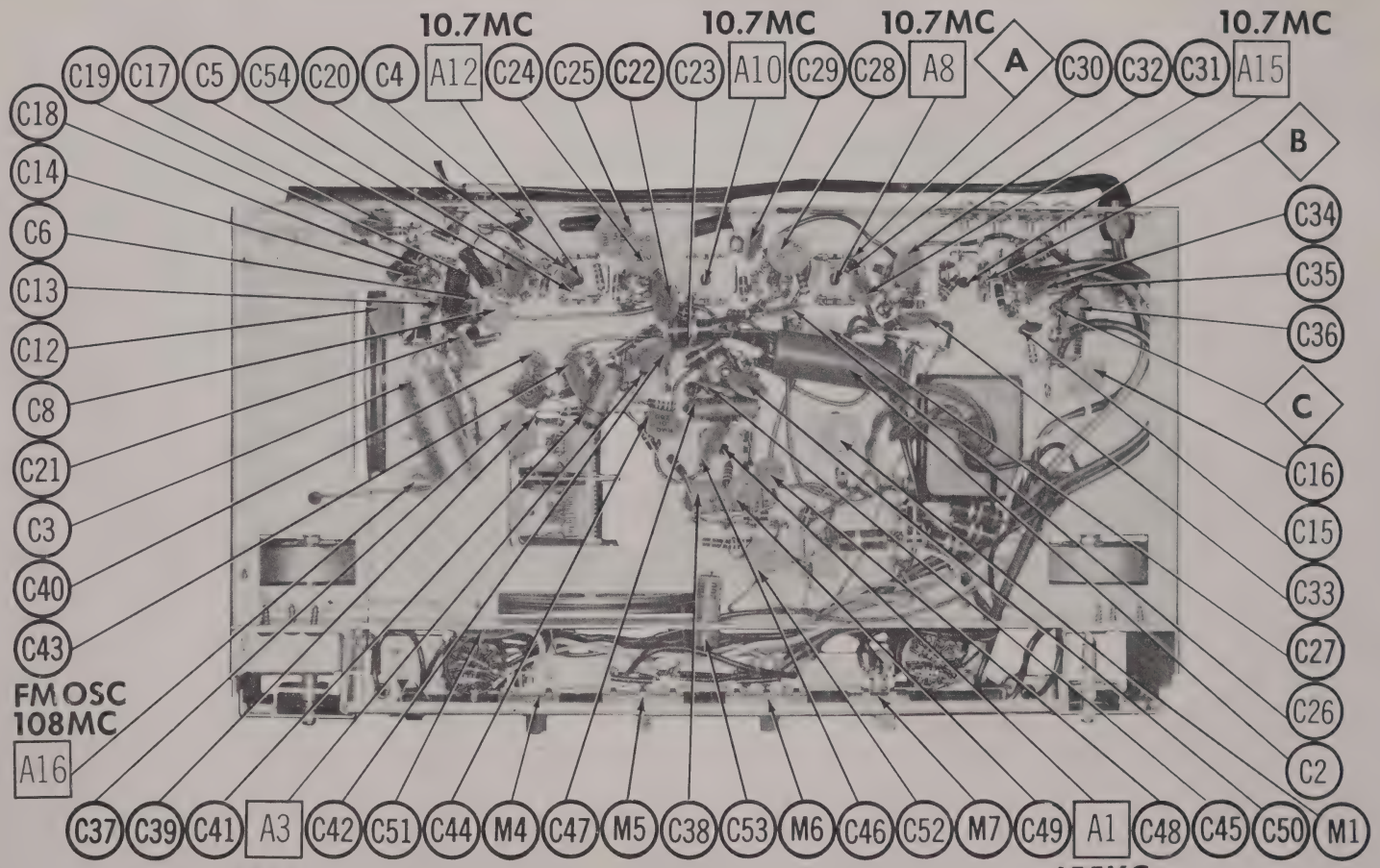
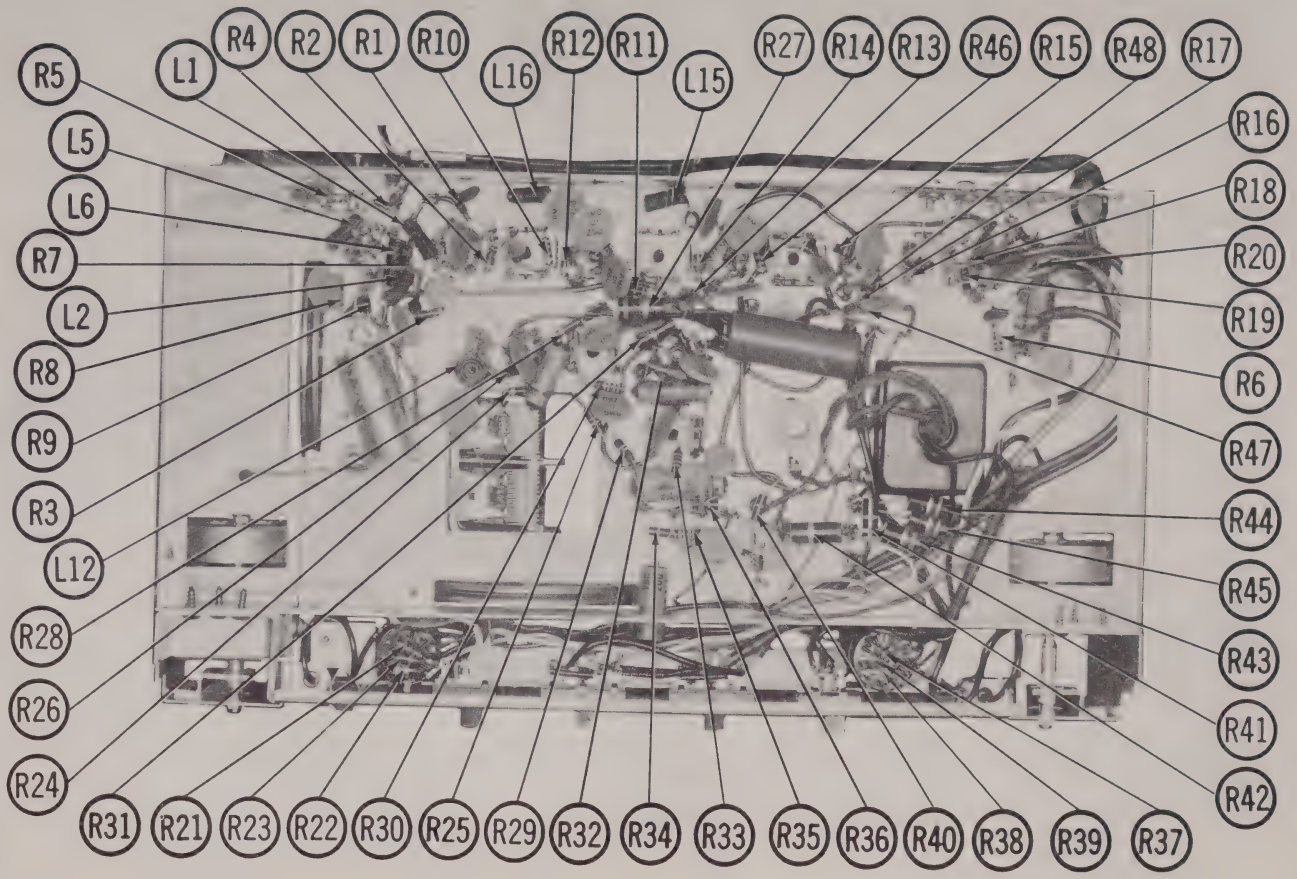
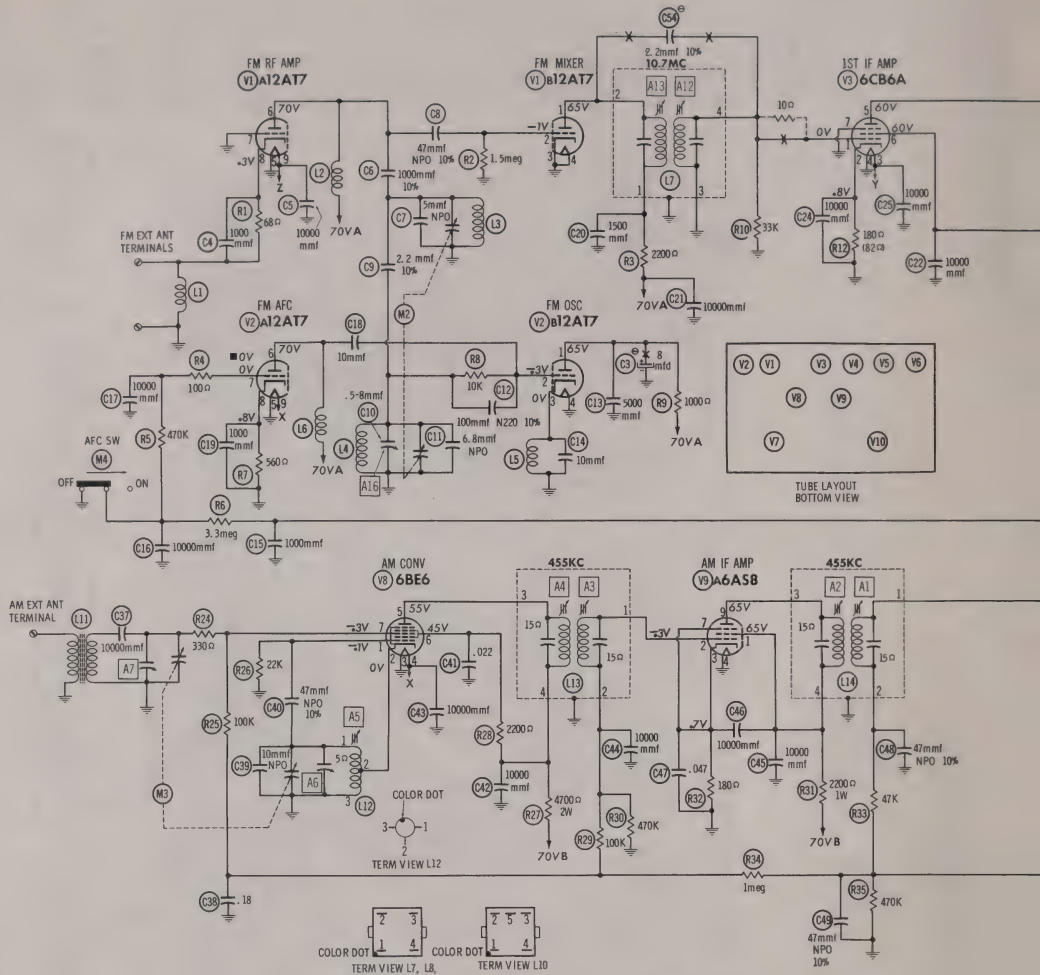


CHASSIS BOTTOM VIEW-ALIGNMENT, CAPACITOR & MISC. IDENT.



CHASSIS BOTTOM VIEW-RESITOR & INDUCTOR IDENT.



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AT7	†3800Ω	1.5meg	0Ω	0Ω	0Ω	†1600Ω	0Ω	68Ω	1Ω
V2	12AT7	†2600Ω	10K	0Ω	0Ω	0Ω	†1600Ω	470K ■4meg	560Ω	.1Ω
V3	6CB6A	0Ω	82Ω	.1Ω	0Ω	†5000Ω	†5000Ω	0Ω		
V4	6CB6	0Ω	47Ω	.1Ω	0Ω	†3800Ω	†3800Ω	0Ω		
V5	6AU6	47K	0Ω	.1Ω	0Ω	†33K	†28K	0Ω		
V6	6AL5	0Ω	100K	.1Ω	0Ω	200K	0Ω	100K		
V7	EM84 6FG6	500K	NC	1200Ω	.1Ω	0Ω	†150Ω	†470K	NC	†470K
V8	6BE6	22K	0Ω	0Ω	.1Ω	†8700Ω	†11K	600K		
V9	6AS8	†6200Ω	400K	180Ω	0Ω	.1Ω	450K	180Ω	0Ω	†6200Ω
V10	EM84 6AG6	1.5meg	NC	1200Ω	.1Ω	0Ω	†150Ω	†470K	NC	†470K

ALL MEASUREMENTS MADE IN "STEREO" POSITION.
■ MEASURED WITH "AFC" ON.
† MEASURED FROM OUTPUT OF M1.
NC NO CONNECTION

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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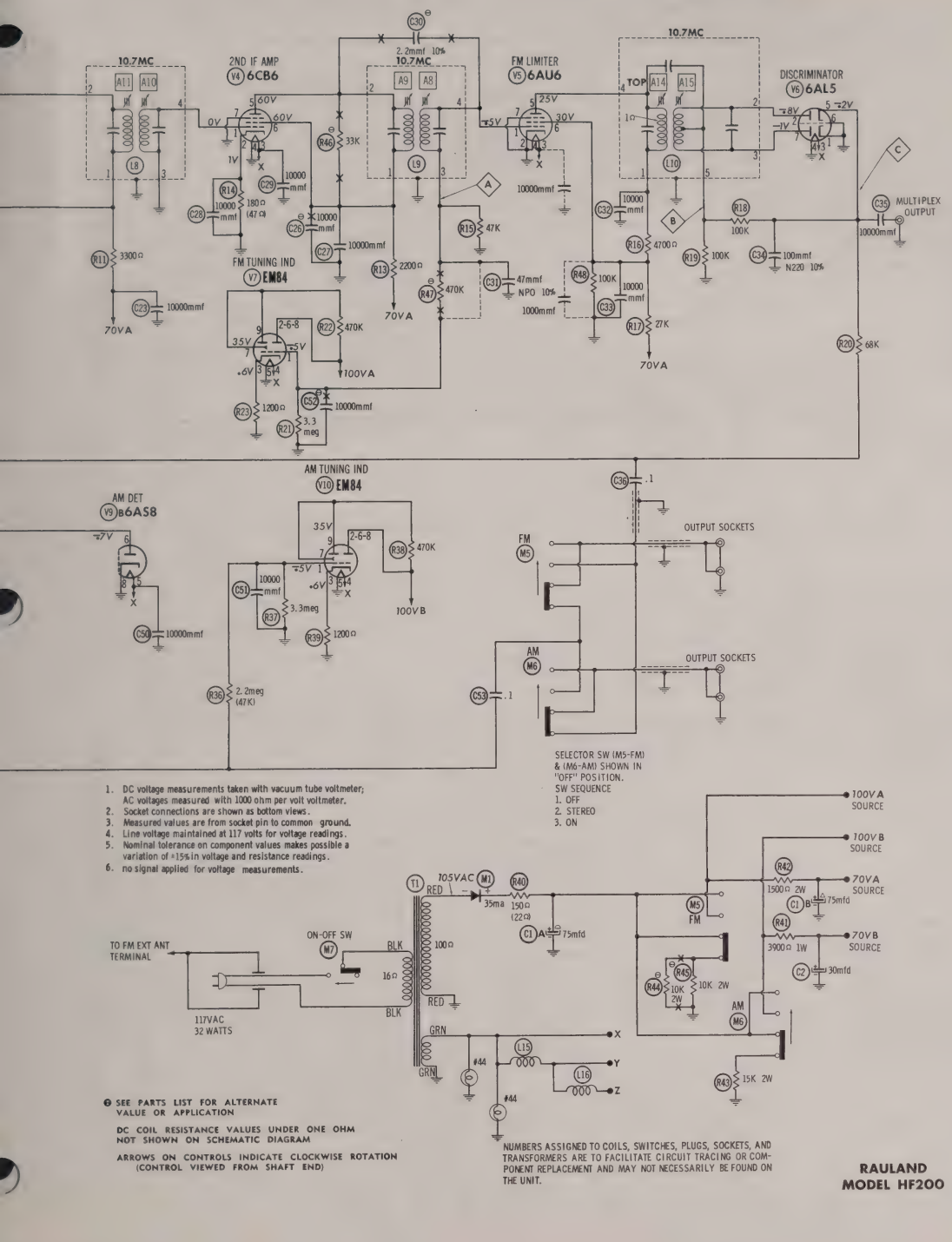


1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. no signal applied for voltage measurements.

❷ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RAULAND MODEL HF200

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use only enough generator output to provide a usable indication.

Suggested Alignment Tools:
A1 thru A5, A14, A15 ... GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545
A6, A7 ..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520
A8 thru A13, A16 ..... GENERAL CEMENT #5097, 8727
WALSCO #2515

AM ALIGNMENT - SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	High side thru .01mfd to pin 7 (grid) of AM Converter Low side to chassis.	455KC (400∿ AM Mod.)	(AM) Tuning gang fully open	AC probe across AM Output Jack.	A1, A2, A3, A4	Adjust for maximum deflection.
2.	High side thru .01mfd to AM Antenna Terminal. Low side to chassis.	600KC	600KC	"	A5	"
3.	"	1400KC	1400KC	"	A6, A7	Adjust for maximum deflection. Repeat steps 1 thru 3.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM - SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	High side thru .01mfd to pin 2 (grid) of FM Mixer. Low side to chassis.	10.7MC (Unmod.)	(FM) Point of non-interference	DC probe to point (A). Common to chassis.	A8, A9, A10, A11, A12, A13	Adjust for maximum deflection.
5.	"	"	"	DC probe thru 1 meg to point (B). Common to chassis	A14	"
6.	"	"	"	DC probe to point (C). Common to chassis.	A15	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE - SELECTOR IN FM POSITION

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	High side thru .01mfd to pin 2 (grid) of FM Mixer. Low side to chassis.	10.7MC (450KC Swp.)	(FM) Point of non-interference	Vert. Amp. to point (A). Low side to chassis.	A8, A9, A10, A11, A12, A13	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
5.	"	"	"	Vert. Amp. thru 47K to point (B). Low side to chassis.	A14	"
6.	"	"	"	Vert. Amp. to point (C). Low side to chassis.	A15	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A14 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT - SELECTOR IN FM POSITION

Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	High side thru 270Ω to FM Antenna Terminal. Low side to chassis.	88MC (Unmod.)	(FM) 88MC	DC probe to point (A). Common to chassis.	L4	Adjust for maximum deflection.
8.	"	108MC	108MC	"	A16	Adjust for maximum deflection.
9.	"	88MC	88MC	"	L3	Adjust for maximum deflection.

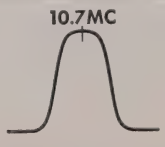


FIG. 1

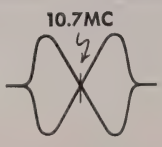


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE
V1	FM RF Amp. - FM Mixer	12AT7
V2	FM Osc. - FM AFC	12AT7
V3	1st FM IF Amplifier	6CB6A
V4	2nd FM IF Amplifier	6CB6
V5	FM Limiter	6AU6

ITEM No.	USE	TYPE
V6	Discriminator	6AL5
V7	FM Tuning Indicator	EM84/6FG6
V8	AM Converter	6BE6
V9	AM IF Amp. - AM Det.	6AS8
V10	AM Tuning Indicator	EM84/6FG6

ELECTROLYTIC CAPACITORS

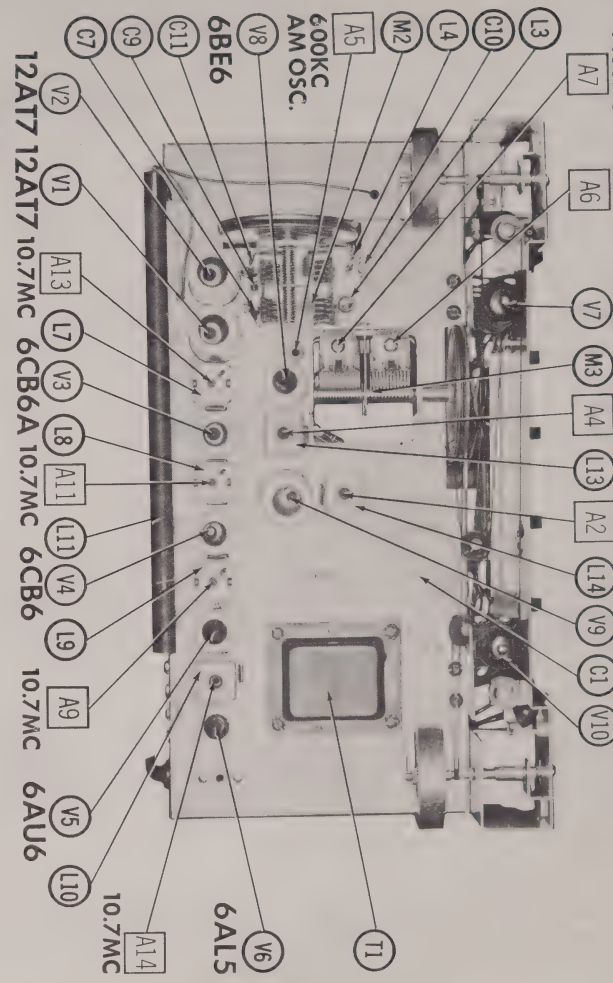
ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA RAULAND PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲75	150	CE-157A	AFH2-20	XB0183	FP214.5		TVL-2442.4	
B	▲75	150							
C2	30	150	CE-306H	PRS1460	BR3015	TC47	TD-30-150	TVA-1412	
C3	8	450	CE-805B-D	PRS1715	BR845	TC71	TD-8-450	TVA-1704	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C5	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C6	1000 10%		DI-1000	DD-102	5R5D1	CCD-102	GP210	10TS-D10
C7	5 NPO		NPO-DI 5.0	DTZ-4R7	C10V5C	CCTO-050	CNO-547	10TCC-V50
C8	47 NPO 10%		NPO-DI 47	DTZ-47	C10Q47C	CCTO-470	CNO-447	10TCC-Q47
C9	2.2 10%		NPO-SI 2.2	TCZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C10	.5-6							
C11	6.8 NPO		NPO-DI 6.8		C10V68C	CCTO-6R8	CNO-568	10TCC-V68
C12	100 N220 10%					*		10TCR-T10
C13	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C14	10		SI 10	D6-100	L10QI	CCD-100	GP410	10TS-Q10
C15	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C16	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C17	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C18	10		SI 10	D6-100	L10QI	CCD-100	GP410	10TS-Q10
C19	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C20	1500		BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C21	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C22	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C23	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C24	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C25	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C26	10000	Note 1	BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C27	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C28	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C29	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C30	2.2 10%	Note 1	NPO-SI 2.2	TCZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C31	47 NPO 10%		NPO-DI 47	DTZ-47	C10Q47C	CCTO-470	CNO-447	10TCC-Q47
C32	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C33	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C34	100 N220 10%					*		10TCR-T10
C35	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C36	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C37	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C38	.18 200V		P288N-2		CUB6P2	2DP-4-204	GEM-402	4TM-P20
C39	10 NPO		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C40	47 NPO 10%		NPO-DI 47	DTZ-47	C10Q47C	CCTO-470	CNO-447	10TCC-Q47
C41	.022 200V		P288N-022	DD-203	CUB4S22	4DP-2-223	GEM-2022	2TM-S22
C42	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C43	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C44	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C45	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C46	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C47	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	4TM-S47

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C48	47 NPO 10%		NPO-DI 47	DTZ-47	C10Q47C	CCTO-470	CNO-447	10TCC-Q47
C49	47 NPO 10%		NPO-DI 47	DTZ-47	C10Q47C	CCTO-470	CNO-447	10TCC-Q47
C50	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C51	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C52	10000	Note 1	BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C53	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C54	2.2 10%	Note 1	NPO-SI 2.2	TCZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22

Note 1. Not used in some versions.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R1	68Ω	
R2	1.5meg	
R3	2200Ω	
R4	100Ω	
R5	470K	
R6	3.3meg	
R7	560Ω	
R8	10K	
R9	1000Ω	
R10	33K	
R11	3300Ω	
R12	180Ω	(82Ω) *
R13	2200Ω	
R14	180Ω	(47Ω) *
R15	47K	
R16	4700Ω	

ITEM No.	RATING	REMARKS
R17	27K	
R18	100K	
R19	100K	
R20	68K	
R21	3.3meg	
R22	470K	
R23	1200Ω	
R24	330Ω	
R25	100K	
R26	22K	
R27	4700Ω 2W	
R28	2200Ω	
R29	100K	
R30	470K	
R31	2200Ω 1W	
R32	180Ω	

ITEM No.	RATING	REMARKS
R33	47K	
R34	1meg	
R35	470K	
R36	2.2meg	(47K) *
R37	3.3meg	
R38	470K	
R39	1200Ω	
R40	150Ω	(22Ω) *
R41	3900Ω 1W	
R42	1500Ω 2W	
R43	15K 2W	
R44	10K 2W	Note 1
R45	10K 2W	Note 1
R46	33K	Note 2
R47	470K	Note 2
R48	100K	

* Alternate Value. Note 1. When R44 is 5000Ω, R45 is not used. Note 2. Not used in some versions

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		RAULAND PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	
L1	FM Ant. Coil		BC-560	4590	RTC-8514	.68uh
L2	RF Choke		BC-564	4608	RTC-8518	3.3uh
L3	FM RF Coil					
L4	FM Osc. Coil					
L5	Cathode Choke		BC-560	4590	RTC-8514	.68uh
L6	RF Choke		BC-560	4590	RTC-8514	.68uh
L7	1st FM IF Trans.	LR-0032	FM-254	1463	RTC-8599	
L8	2nd FM IF Trans.	LR-0033	FM-254	1463	RTC-8599	
L9	3rd FM IF Trans.	LR-0033	FM-254	1463	RTC-8599	
L10	Discriminator	LQ-0181	FM-253	1464	RTC-8665	
L11	Loopstick	LV-0017	BC-419	705-A		
L12	AM Osc. Coil	LL-0059	BC-393	70-OSC	RTC-8647	
L13	1st AM IF Trans.	LR-0041	BC-352	12-C1	RTC-8632	
L14	2nd AM IF Trans.	LR-0041	BC-353	12-C2	RTC-8633	
L15	Fil. Choke		BC-560	4590	RTC-8514	.68uh
L16	Fil. Choke		BC-560	4590	RTC-8514	.68uh

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	RAULAND PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	117V @ .32A	105V @ .035A DC	6.3V @ 3.5A	LP-0277					

POWER RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	RAULAND PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1	.035A	JR0032 *	1N1763 ♦	65 *	SR200 ♦	* Selenium ♦ Silicon

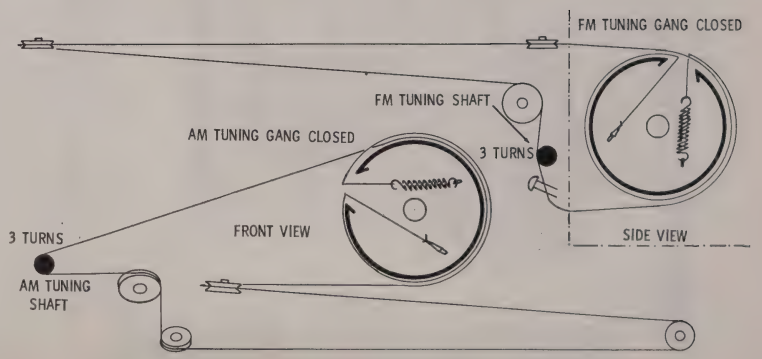
MISCELLANEOUS

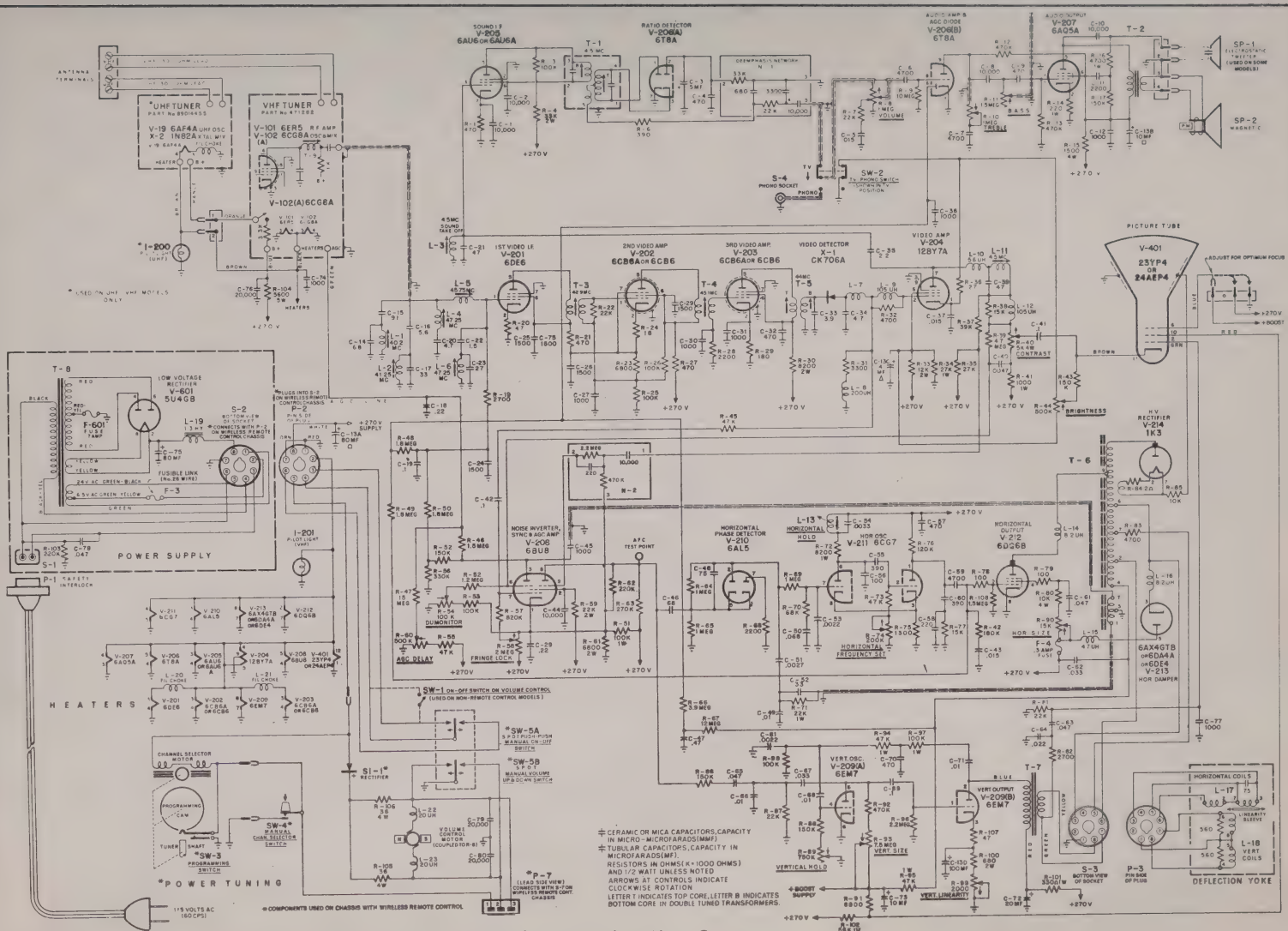
ITEM No.	PART NAME	RAULAND PART No.	NOTES
M2	Tuning Cap.	CV-370A	FM, 2 Gang
M3	Tuning Cap.	CV-561	AM, 2 Gang, (Ant. 20-480mmf, Osc. 12-190mmf)
M4	Switch		AFC Off-On (SPST Slide Type)
M5	Switch		FM (DP Three Position Slide Type)
M6	Switch		AM (DP Three Position Slide Type)
M7	Switch		Off-On (SPST Slide Type)

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

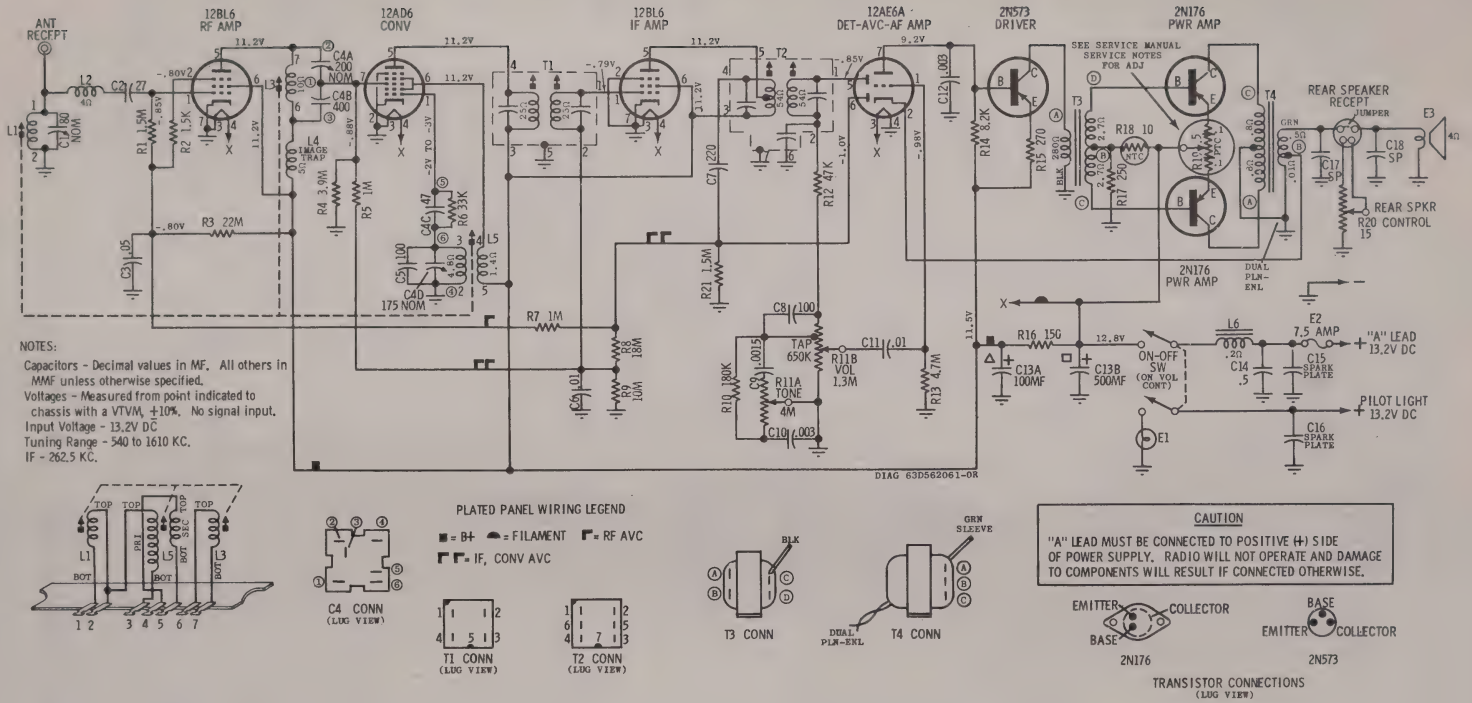
DIAL CORD STRINGING





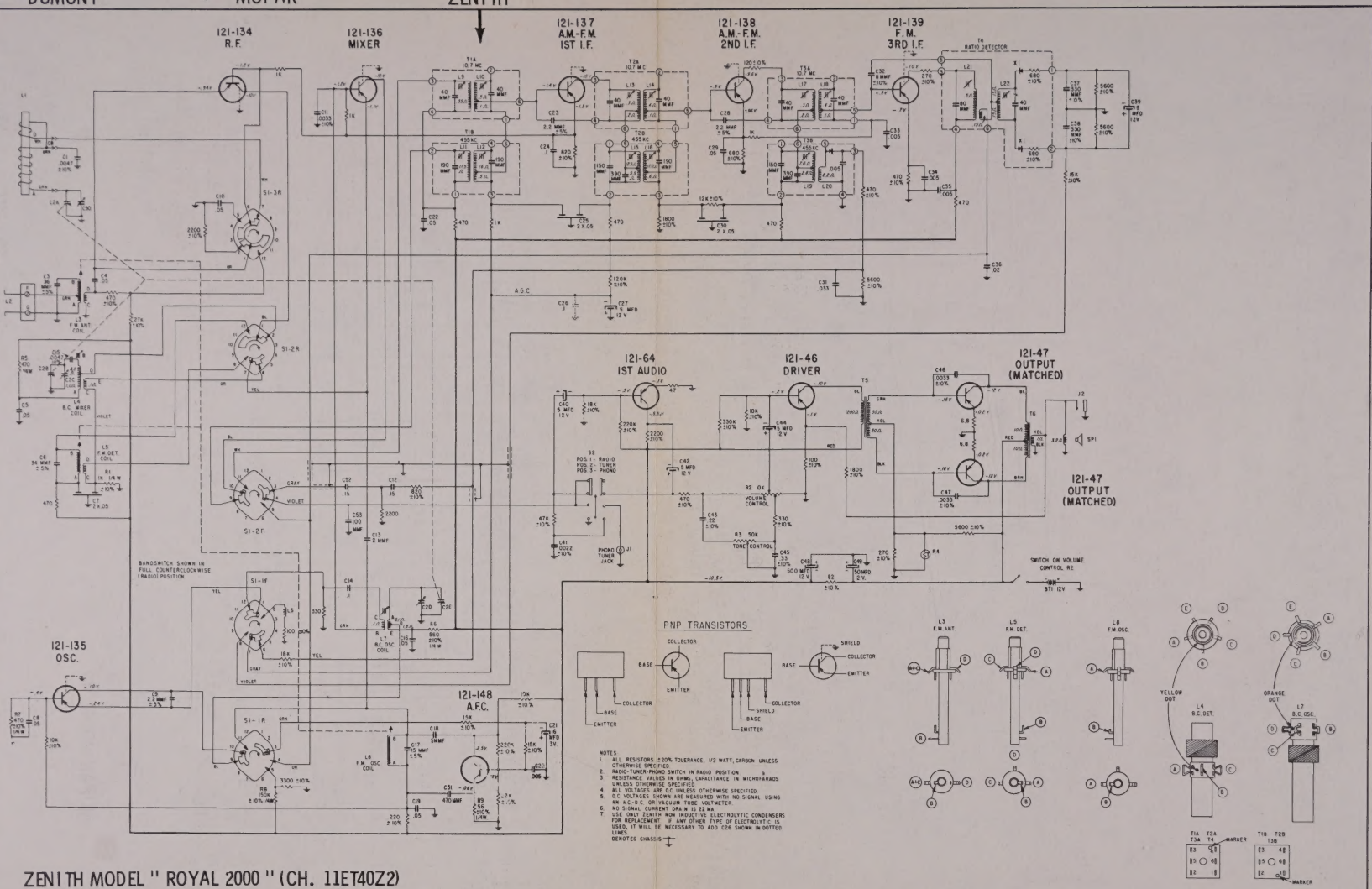
DUMONT MODELS RA-700-B50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68 (CH. 120602, 120604)

Schematic Diagram Courtesy of Dumont Television And Radio Corporation


ANT RECEPT
12BL6 RF AMP
12AD6 CONV
12BL6 IF AMP
12AE6A DET-AVC-AF AMP
2N573 DRIVER
2N176 PWR AMP
SEE SERVICE MANUAL SERVICE NOTES FOR ADJ
REAR SPEAKER RECEPT
JUMPER
REAR SPKR R20 CONTROL 15
2N176 PWR AMP
DUAL PLN-ENL
ON-OFF SW (ON VOL CONT)
"A" LEAD 13.2V DC
PILOT LIGHT 13.2V DC
7.5 AMP
NOTES:
Capacitors - Decimal values in MF. All others in MMF unless otherwise specified.
Voltages - Measured from point indicated to chassis with a VTVM, ±10%. No signal input.
Input Voltage - 13.2V DC
Tuning Range - 540 to 1610 KC.
IF - 262.5 KC.
DIAG 63D562061-0R
PLATED PANEL WIRING LEGEND
B+ FILAMENT RF AVC
IF, CONV AVC
C4 CONN (LUG VIEW)
T1 CONN (LUG VIEW)
T2 CONN (LUG VIEW)
T3 CONN
T4 CONN
DUAL PLN-ENL
GRN SLEEVE
CAUTION
"A" LEAD MUST BE CONNECTED TO POSITIVE (+) SIDE OF POWER SUPPLY. RADIO WILL NOT OPERATE AND DAMAGE TO COMPONENTS WILL RESULT IF CONNECTED OTHERWISE.
EMITTER COLLECTOR BASE
2N176
BASE EMITTER COLLECTOR
2N573
TRANSISTOR CONNECTIONS (LUG VIEW)

MOPAR MODEL 307

Schematic Diagram Courtesy of Motorola Inc.



ZENITH MODEL " ROYAL 2000 " (CH. 11ET40Z2)

Schematic Diagram Courtesy of Zenith Radio Corporation

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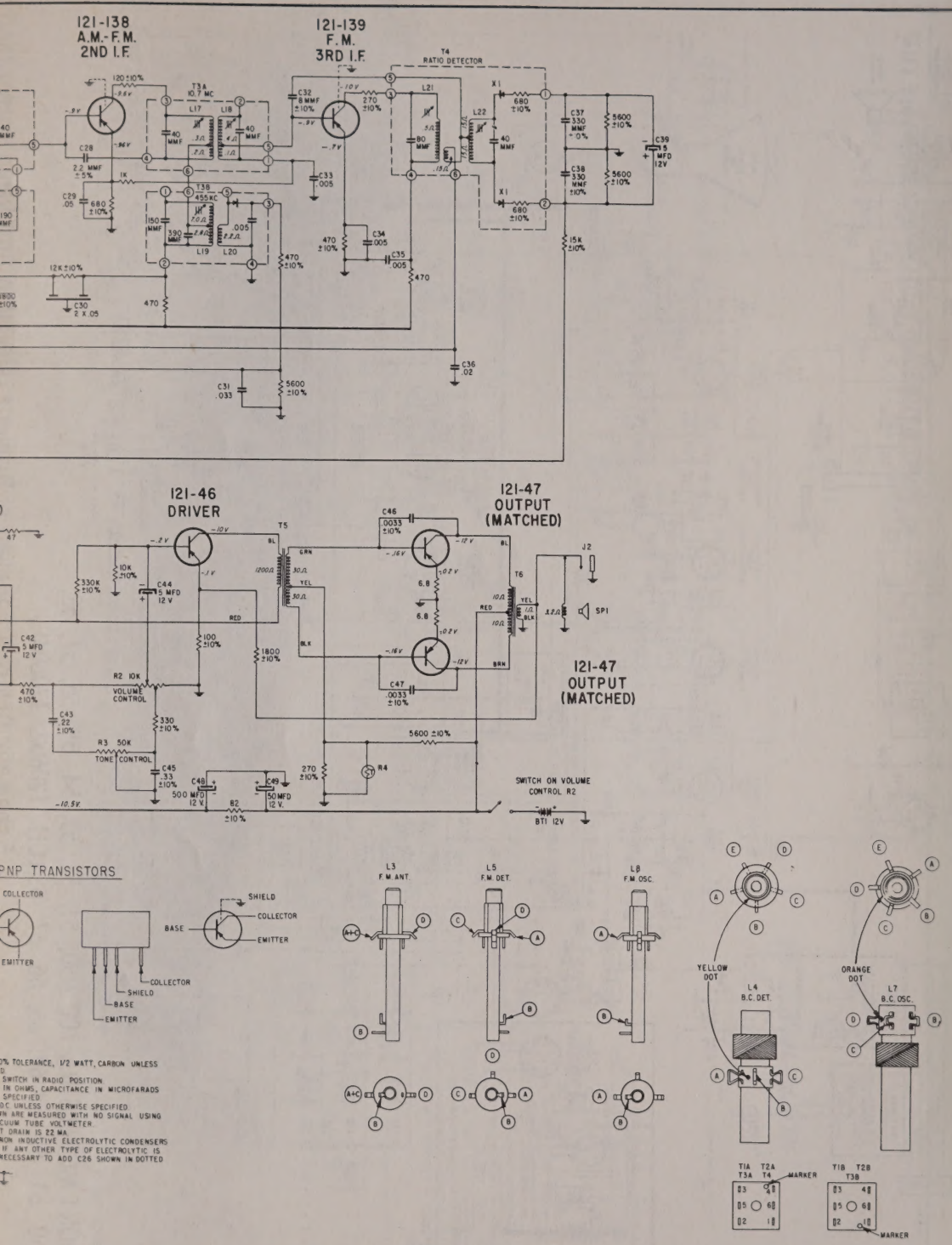

Schematic Diagram Courtesy of Zenith Radio Corporation